WP2 so far

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Objectives of WP2

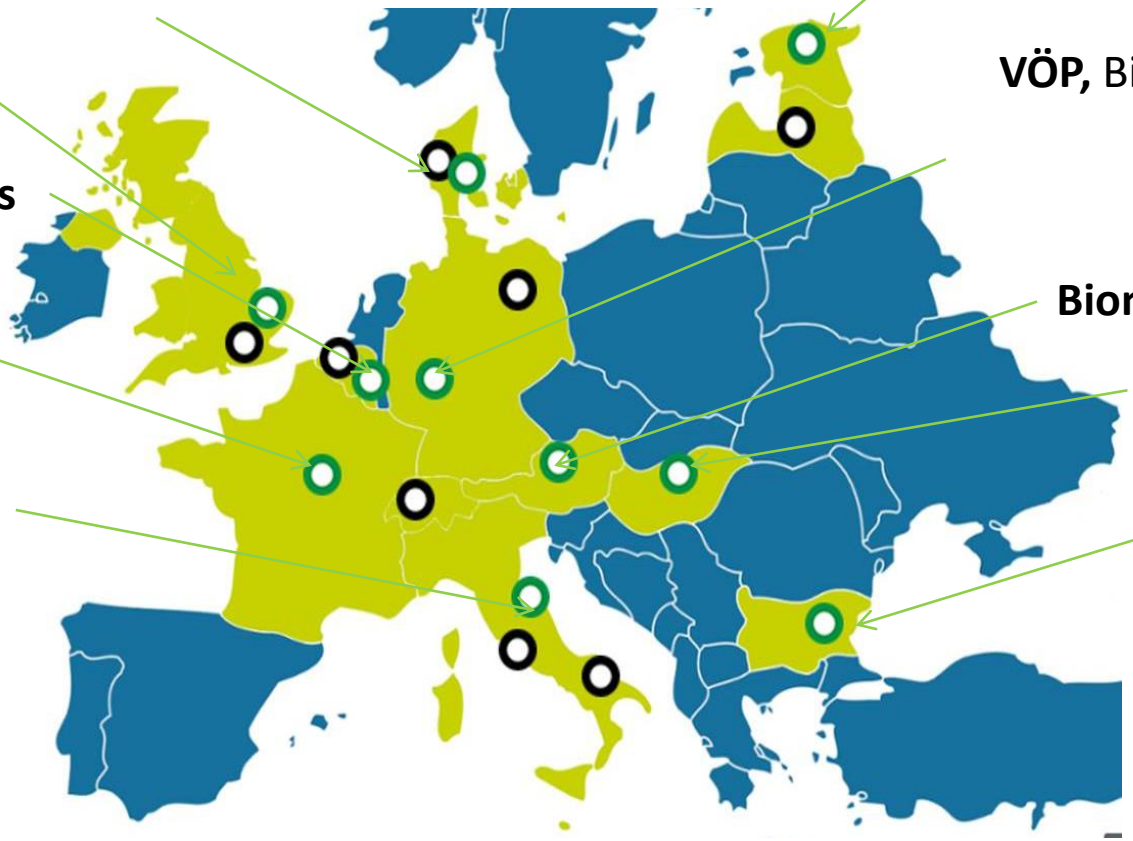
- Co-ordinate the interaction and exchange between the **national /regional farmer innovation groups** to ensure good and constructive communication (Task 2.1)
- Develop a **framework** that facilitates structured exchange of experiences in the area of arable crop production; developing conclusions for a general application in Europe based on regional results (Task 2.2)
- **Testing** innovative end-user and educational material, (e.g. manuals, web-based tools, interactive workshops etc.) and understand reasons for acceptance and successful implementation (Task 2.3- ongoing)
- Develop **recommendations** on the experiences (Task 2.4 – not started)

Co-ordination

Task 2.1

Farmer groups

Other project partners



ORC

SEGES

EOFF

VÖP, Bioland

BioForum Flanders

ITAB

Bionet Austria (FIBL AT)

ÖMKi

ConMarcheBio

Bioselena

10 Practice Partners

Bionet Austria collaborative KE project represented by FIBL Austria (2 groups)

BioForum Flanders non-profit sector organisation for organic farming and food, Belgium

Bioselena Foundation for Organic Agriculture, Bulgaria

ConMarcheBio Consortium of 5 co-operatives, Italy

ITAB Technical institute for organic farming, France (2 groups)

EOFF Estonian Organic Farming Federation (EOFF), Estonia

ÖMKi Research Institute of Organic Agriculture, Hungary

SEGES Knowledge Centre, Denmark (3 groups)

VÖP Network of organic farming organisations, Germany (represented by BIOLAND & FIBL-DE)

ORC - **Co-ordination** Organic arable group (1 group in collaboration with Organic Arable & OF&G)

Framework for structured knowledge exchange (Task 2.2)

Getting to know more about:

- The groups & their members
- The soil, climatic conditions & local context
- Crops grown & rotations
- Main challenges faced (as experienced by the farmers)
- Solutions tried
- Communication

Structure of the 14 farmer groups

Group establishment	between 2010 and 2015
Frequency of meetings	2 to 3 times per year
Group size	6 to 49 members (average 20)
Members	mix of new entrants and experienced organic farmers
Age of farmers	most over 30 (ranges from 20 to 70 years old)
Gender	predominantly male
Communication	E-mail, Telephone, SMS Limited use of social media

206 farms are group members

Highly variable soil and climatic conditions

Range of farm types

- Specialised cereal producers (stockless) most frequently mentioned
- Mixed (cereals, livestock and field vegetables)
- Horticulture

Farm sizes are also variable

- Group averages range from 10 ha (BE) to > 200 ha (EE)
- From 0.5 ha in Hungary and 1,110 ha in Estonia
- Generally appear larger than national averages

There is no one typical organic arable farm

Variable soils and climate

Soils	Highly variable Soil organic matter values range from 0.5% to 20%
Climatic zones	9 groups in northern temperate zone, 4 continental, 1 alpine
Altitude (m above sea)	7 below 300, 6 between 300 and 600 2 above 600, some cover all three zones
Rainfall (mm)	Most groups between 300 to 900mm, only one group reported higher

Crops grown are diverse

Cereals: less dominated by wheat and barely also rye, triticale, spelt, oats, millet, durum wheat are grown

Grain legumes: at least one type, peas and field beans most commonly mentioned

Grass-clover: Leys are part of typical rotations

Root crops: in some groups with potato most common

Wide range of crop yields reported

Yields vary within and between groups

- BG & EE lowest yielding
- DK & BE highest yielding

Variability in soils and climate

Yield limiting factors reported

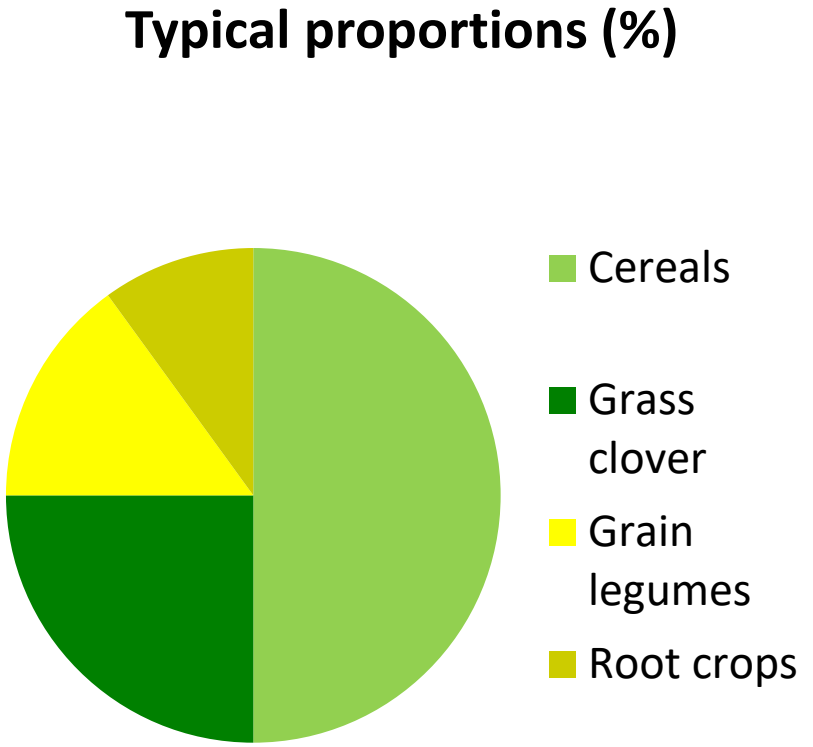
- too much rain (spring & summer),
- unpredictable rainfall and extreme weather events

Data suggest there is a need but also a clear possibility to improve yields on farms

Crops	Farm group range (t/ha)	Compared with wider literature
Wheat	0.3-8	Cereals: 7-26 % lower than conventional Gap is bigger for wheat & barley, lower for maize
Barley	1-7	
Triticale	1-9	
Rye	1.2-6.5	
Spelt	0.8-5.5	
Oats	1.6-6.5	
Maize	3-15	
Peas	1-4.5	Legumes: 5-18% lower Higher for pulses than mixture
Faba Beans	0.5-5	
Grass/ clover	5-12	

Examples of typical rotations

- 3 to 9 years long
- Include grass/clover ley
- Some with pulse crop or forage legume
- Variability within groups
- May not describe what group members implement in practice



Detailed analysis of rotations and implications for yields is only possible with individual farm data

3 main challenges of each group

GROUP	CHALLENGE 1	CHALLENGE 2	CHALLENGE 3
AT1	Soil fertility	Nutrient cycle	Climate change
AT2	Nutrient cycle	Weed management	Climate change
BE	Soil (fertilisation)	Diseases & pests	Weeds
BG	Pests & disease	Lack of knowledge	Weed control
DK1	Fertiliser	Rotation with clover grass	Economics
DK2	Weeds	Minerals & fertiliser	Management for weeding
DK3	Management	Minerals & fertiliser	Weeds
EE	Soil fertility	Weed control	Pests & disease
FR1	Nitrogen management	Weed management	Organic breeding/varieties
FR2	Weed management	Nitrogen management	Biodiversity
DE	Nutrient supply	Crop rotation	Disease & weed management
HU	Weed management	Pest management	Soil & Water management
IT	Mechanisation (Weed control/ploughing)	Seed availability	Soil fertility and fertilisation
UK	Weeds	Soil fertility	Yield, tillage, lack of knowledge/research

Weeds: top issue for 12 groups

Commonly occurring problem weeds

- Thistle (Cirsium)
- Fat hen (Chenopodium album)
- Docks (Rumex L.)
- Couch grass (Elymus repens)

Examples of specific weed problems

- Blackgrass (Alopecurus myosuroides) in UK
- Quickweed (Galinsoga) in Belgium

Solutions used: Crop rotation & crop management, mechanical weeding and min-till

Strong interest in weed suppressing rotations

Soil fertility: top issue for 8 groups

All groups report using rotations for fertility building

Key questions and knowledge gaps

- How to effectively design rotations and manage system for maximum fertility? Particularly for stockless systems?
- What off-farm inputs to include, when to apply them and how to get hold of them?
- How to cultivate soils to maintain fertility (tillage)?
- How to measure soil fertility? (Soil testing is done on average only once every 5 years)

Solutions used: working with reduced tillage (3 groups)

Interest in catch crops and intercropping, mycorrhizae and use of compost

Pests & disease control: top issue for 5 groups

Ranked high where more horticultural and field crops (BU, EE)

Diseases thriving in temperate, cool, wet and humid conditions.

Most commonly reported disease problems include:

- rusts (particularly yellow rust; *Puccinia striiformis*),
- late blight (*Phytophthora infestans*),
- mildew (powdery: *Blumeria graminis* and downy: *Peronospora farinose*).

Commonly reported pests include pollen beetles (*Meligethes spp*), wireworm (*Agriotes spp*.) and aphids (*Aphidoidea spp*.).

Knowledge gap: Lack of resistant crop varieties and certified plant protection products

Solutions used: Rotations, drilling date, tillage and variety selection.

Conclusions so far

- Comparing results with research experts (WP3) and report of EIP-AGRI focus group organic
  - Main challenges identified are similar but different emphasis
- Key issues are likely to affect the wider organic arable community
- However, site and system specific solutions are required
  - Generic tools will not necessarily address problems of individual farmers and groups
  - Inherent complexity conflicting goals in management

How do the groups access information (see also WP3)

Face-to-face meetings are important

Advisors play key role in information provision but varies

Demand for **practical information**

- research outputs often fail to meet farmer needs (not practical, too generic).
- demand for decision support systems/tools
- farmer knowledge (likely to be context specific).
- Practical demonstration

Format

- Printed materials still important source of information.
- So far limited use of online tools and social media channels, but growing interest
- Video is a popular medium
- Interest in interactive tools

Time

- Information that can be consumed quickly and easily.
- Searching is time consuming

Clear demand for information that is independent, trustworthy and reliable

Testing of education material (Task 2.3 – ongoing)

- Close links to WP3 and 4
- Three steps proposed for the groups
  - Workshop 1 (over the summer)
    - Narrow down tool choice and suggests own tools
    - 6 groups have reported so far
  - Workshop 2 (before End of December 2016)
    - evaluate 2-3 tools in more depth and
    - identify theme for practical testing next year
  - Practical testing of ideas (during 2017)
    - Give groups the chance to do some demonstration/trial
    - 2 groups have developed their testing plans
    - *Seeder for equal spacing to suppress weeds (Italy)*
    - *Tool for dock control (Denmark)*

First feedback from workshop 1 for choosing tools (not all groups)

- Visuals rather than words
  - Videos being preferred
  - Layout using pictures
- Clear and practical recommendations
  - Specific *versus* system level
- Language matters
  - Farmers work in their own language
- More interactive tools are wanted
  - But important to remain relevant and rigorous

Next steps

- Group coordination
  - Monthly newsletter for practice partners to keep involved
  - Support groups to share the outcomes of their testing (e.g. through short videos, practice abstracts etc).
  - Develop small programme of themed practical workshops
- Milestones and deliverables
  - Synthesise workshop results on tool choices, preferences and gaps (MS 10: Dec 2016)
  - Full report on usefulness of tools (D 2.2: Nov 2017) and scientific paper (D 2.3: Feb 2018)
  - Develop recommendations for research agenda in organic farming (D 2.4: Feb 2018 Bioland)