

► Project *brief*

Thünen Institute of Farm Economics

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“Research workshops“ for sustainable arable farming

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- **Negative environmental impacts of arable farming systems, e.g. on biodiversity due to nitrogen surpluses and the use of pesticides, must be reduced. It is therefore necessary to further develop arable farming systems extensively.**
- **There are many calls for establishing practical research networks to enable transformation. We have developed a concept for so-called "research workshops" in arable farming. We show what framework conditions and resources are needed to integrate new production methods or technologies into arable farming systems.**
- **In the "research workshops", the participants from practice, science, advisory services and other relevant stakeholder groups work together to develop solutions and test them on areas of the participating farms over a period of at least one rotation.**

Background and aims

(Conventional) arable farming systems in Germany are facing major challenges that require the extensive further development of production systems. On the one hand, this is driven by agronomic factors such as increasing resistance to pesticides, soil compaction and the need to adapt to climate change. On the other hand, social demands on arable farming are increasing. Negative environmental impacts such as the loss of biodiversity shall be minimised, for example, by reducing the use of nutrients and pesticides. It is foreseeable that optimising individual parameters in the production systems will not be sufficient to meet the diverse and sometimes very different regional challenges.

Numerous elements that can contribute to solving the challenges have already been scientifically analysed. Examples include experiments on the optimisation of crop rotations, the use of pesticides and mechanical weed control. However, there is a lack of approaches for combining the individual components into practical and economically viable concepts adapted to the site. In order to develop viable overall concepts, stakeholders from science, agricultural practice, industry, consultancy and society should therefore work together on a transdisciplinary basis at regional level.

There is already a great deal of experience from projects in which a wide range of stakeholders have worked together in networks, also at regional level. However, these projects have typically focussed on individual issues and not on the adaptation of entire cultivation systems. Against this background, the question arises how participatory/on-farm research networks for arable farming issues should be designed

in order to further develop entire arable farming systems or to be able to change several parameters simultaneously.

Approach

First, we conducted an internet/literature search to gain an overview of different practice-based research approaches. We then led expert interviews with selected participants in previous participatory research networks in order to identify the strengths and weaknesses of various approaches. Based on the expert interviews and the literature research, we developed the concept for the research workshops.

Key findings

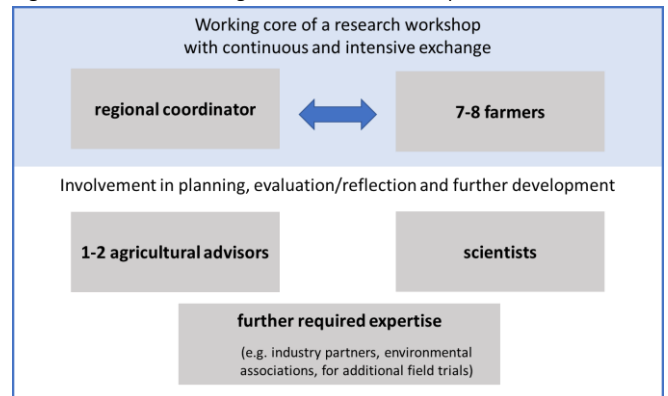
- The challenges to be solved are site-specific. Regional solutions are therefore necessary, meaning that several regional research workshops need to be established.
- Although the challenges are site-specific, the overarching objectives are the same for all research workshops. Against this background, there should be an overall coordination unit. This links the various research workshops with each other, coordinates the work of different scientific disciplines and provides the infrastructure for data collection and analysis.
- For farmers, exchange and joint learning are important motivating factors in participatory research networks. In addition, there should be appropriate financial compensation for farmers, taking into account in particular the workload for project work and the increased

production-related risk that changed production methods entail during the learning phase.

- The benefits and applicability of results are generally more important to farmers than scientific accuracy. This applies in particular to the ability to assess the practicability and profitability of methods.
- System trials are ideal for the extensive further development of cropping systems, as they allow to address several problems simultaneously and to assess the suitability for practical use of further developed cultivation systems.
- Approaches that aim to implement changes in the entire arable farming system require a long project duration of at least seven, preferably ten to 15 years. The funding guidelines should be adapted accordingly.
- Good coordination and farm support are essential in order to organise the various tasks involved in working with farmers, to ensure the long-term motivation of farmers and to assist with the practical implementation of the further developed cropping systems.
- Farm data required for the evaluation of cropping systems should be recorded in an electronic field index. These data should be analysed and linked to other (trial) data using a central infrastructure.

Based on these results, we have developed a concept for research workshops in which farmers are the central actors who both identify the challenges and develop possible solutions together with the other actors (see Figures 1 and 2). Solutions should be developed interactively by all participants. Furthermore, in contrast to traditional scientific experiments, it should be possible to further develop the tested approaches over time in order to improve their practicability. Figure 2 shows how such an iterative approach might look like.

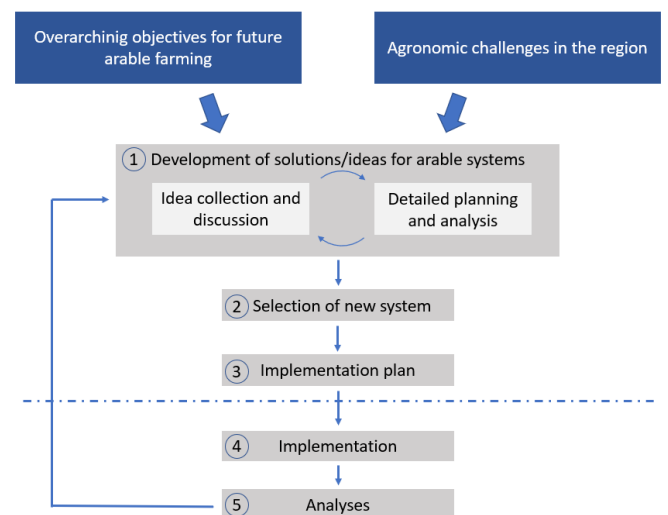
Figure 1: Structure of a regional research workshop



Source: Own illustration.

As there is already a large number of participatory research approaches with very different objectives, and as involved people face similar (organisational) challenges, a central networking unit should be set up for the many existing participatory research networks. Its tasks would be a) to set minimum standards for on-farm research trials, b) to provide and further develop the (database) infrastructure required for analyses, c) to offer training for new coordinators and d) to promote networking and exchange between different projects.

Figure 2: Process of further development of cropping systems



Source: Own illustration.

Weitere Informationen

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Support

