AGRIDEMO

Case study reports:

Sweden CS3

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1. Background

Programme

The Odling In Balance project started 1992 by farmers who wanted to work for a more sustainable farm production. It is based on 17 Swedish pilot farms that work together with several stakeholders, researchers and advisers on several projects. It is a multi-partner project. The OiB farms are showing up trials and good management examples to other farmers. The OiB farm network meet at different farms together with stakeholders and researchers several time per year.

The farm network works with both production issues and environmental and climate issues. The OiB network was an early developer of the nutrient balance method to evaluate fertilisations efficiency and environmental impact due to how and when fertilisation is applied. A huge amount of data has been gathered from the farms and a system with environmental indicators was developed by OiB. The nutrient balance method and the environmental indicators has later been adopted by the Swedish voluntary advisory system "Focus on nutrient". Example of questions that have been addressed in the OiB-project are; how to reduce eutrophication, how to fertilise optimally for both environment and economy, how to avoid soil compaction, how to increase energy efficiency on the farm, and how to exchange fossil fuel with biofuel, how to increase biodiversity, how to use conservation agriculture, how to get to a sustainable use of pesticides (IPM), how to set up a healthy crop rotation plan, how to increase yield without increasing environmental impacts, how to set up a sustainable water management, how to work to reduce climate emissions during production etc. A motto that the network work for is that it needs to be balance between ecology and economy in production. The production needs to be economic but shall not negatively affect the environment; it shall support a sustainable production in the long perspective.

Innovations have been taken up and tested on the farms. When ready they have been available to disseminate to other farmers. One such example of an innovation from OiB is the biobed, which now is established in many farms in Sweden and the concept have been spread to farms in the whole world. An ongoing example of an innovation is called SamZon, which is about how to set up multifunctional protection zones to both promote and protect the environment and production.

Funding and Governance

OiB is funded by research and development projects and by the stakeholders linked to the network. The OiB work is steered by a group of independent scientists and representatives from agricultural organisations. The pilot farms are chosen to represent different productions and are situated in the south of Sweden in areas where there is dense arable agricultural production. Demonstration activities are often free for the visiting farmers. Many of the demonstrations on the farms are arranged voluntary by the farmers, while some are financed by the group that is visiting the farm. When it is a field trial in a farm, it is financed as a part of a research study.

Actors and networks

The pilot farmers consist of ordinary conventional and organic farmers. The manager of OiB arranges and administers workshops and seminars, writes report and is responsible for gathering data and samples from the pilot farms. Demonstrations on the farms are often facilitated in collaboration between the farmer and the manager of OiB or between the farmers and the visitors. Usually demonstration activities are targeting to a specific invited group, but sometimes it is a more open invitation. Once a year, a large seminar is organised on a topical theme, with an open invitation. At that event, different groups are attending the meeting such as farmers, advisers, suppliers, researchers, authorities and NGOs. Since OiB is an economic entity, this is the formal annual meeting with its members-owners. OiB is working with the agricultural business network in Sweden, which is involved in different projects.

How it works

- The OiB network choose different project to choose demonstration activities suited to OiB purpose and goal.
- OiB is applying for money from a financing institution or from someone in the agronomic business that they collaborate with.
- Many of the project is developed in close collaboration, farmers, advisers, researchers, suppliers, and sometimes NGO.
- Tests and field trials are set up.
- OiB experiences and findings from the studies or the field trials are analysed and summarised.
- They are then communicated at demonstrations on farms and at a yearly meeting every year to other farmers, advisory companies, authorities, and suppliers.
- Findings and practical experiences are shown at OiB farms, and the farms are open for visits.
- Results are published in press and in scientific magazines.

Event Farm and location

The farm is an arable farm near Enköping, Sweden. The farm has been a member of OiB almost from the setup of the network. The owner bought this, previously family, farm in 2012 and runs it together with another farmer.

Apart from the group of grazing beef cows, whose task is to graze at the beach beds and in the semi natural grassland, the farm is focusing on plant cultivation.

Many steps towards increased sustainability have been taken on the farm. These include buffer zones for protection of watercourses and support for pollinators, pond for phosphorus retention, a biobed that collects and breaks down pesticides during cleaning of sprayer, integrated plant protection (IPM), and various technologies for efficient energy and nutrient utilization such as how they use a Yara sensor to vary and optimize the fertilisation on the field according to the crops need. They have recently replaced the oil boiler to a dryer with biofuel. One of the farmers expressed that one of the interesting thing about being a pilot or a demonstration farms is that by telling what we do to others, we also begin to look at ourselves with new eyes.

Event

During the world water conference in Stockholm a group of about 50 persons visited the OiB farm outside Enköping. The event took place at the end of August.

Participants were a wide range of people from several countries of Africa, Asia, North and South America and Australia. As they are responsible for water irrigation and water supply to fields and households, many of them have direct contact with farmers, and they were interested in how Swedish farmers handle water problems such as drought, contamination of clean water and irrigation.

Participants had traveled by bus from Stockholm. During their trip, a researcher from SLU told the visitors basic facts on Swedish climate, cultivation conditions and common management of farms in Sweden. At the farm, the visitors were welcomed by the farmers, who gave them basic information about the farm and their management. The farmers told the visitors how they work with environmental and production issues, and how they balance both ecology and economic issues in their management. The OiB manager showed the biobed and spoke about the Farming In Balance (OiB) concept. After a round trip on the farm, participants visited a field where the phosphorus dam and a semi natural grassland with high biodiversity quality was shown. The organisers received several interesting questions, such as how OiB works to motivate farmers to work for sustainability and to adopt new methods.

2. Method

In line with the Methodological Guidelines, three main data sources are used: a background document and interviews at Programme and Farm level to analyse structural and functional characteristics, and event tools and surveys to analyse event level participation and learning, as follows:

1. A background document for every case study was completed by the AgriDemo-F2F partner who carried out the case study.
2. Interviews with representatives of programme/networks (level 1) and farm level interviews with demonstrators/hosts (Level 1) to reveal how the functional and structural characteristics enable learning. Analysis of these interviews is reported in Sections 3 and 4. Data is sourced from 1 interview with a Programme member and 1 at the farm level with the host farmer. The analysis followed 5 themes: (1) Coordinating effective recruitment of host farmers and participants, (2) Developing and coordinating appropriate interaction approaches, (3) Planning, designing and conducting appropriate demonstration processes,(4) Enabling learning appropriate to purpose, audience, context, (5) Follow-up activities.
3. Event tools and surveys (Level 3) to reveal peer to peer learning processes. Event details and analysis is reported in Section 5. This data is sourced from 3 pre-event demonstrator surveys and an event observation tool completed by an observing researcher. This data is mainly used for the analysis of learning processes and learning outcomes related to the specific event and overall comments on the effectiveness of the event.

Finally, partners reviewed the case study reports to prepare their workshops with different stakeholders related to the case studies. These workshops aimed at validating the data presented in the case study reports. The workshop for the Danish and Swedish case studies was held on the 17th of October, 2018.

3. Structural characteristics

T1: Programme/network level

The initiative of this demonstration came from the Swedish University of Agriculture, they have been asked by the organiser of the world water week to find a farm that could demonstrate their management. The topics that should be shown on the farm were chosen in a collaboration between the farmer and the Swedish University of Agricultural Science. Since the topic of the conference was about water management. The main focus was on issues about limiting water resources and how to protect water bodies from contamination.

1. Objectives of the network OiB

The network's objectives when organising demos is to show how production can be both efficient and sustainable at the same time. Thus, its overall demonstrations are characterised as having a whole farm approach and are a mixture of exemplary and experimental approaches, depending on the network's initiatives and/or project collaborations (programme level interview). At the farm level, the host farmer described their approach as exemplary with a whole farm approach as a guiding principle. Their objectives are both showcasing sustainable farm management practices, but also, through interaction with other farmers, their self-improvement and further advancement of approaches.

> It is that both being able to showcase the management direction we think is good. We like feedback and questions from others about our production management. This visits and visitor can lead to development of our business as well. (Host farmer)

To meet its objectives, the organisation, being a network of farms, manages demonstrations with its member-farmers, and when appropriate or needed, it teams up also with other farmer organisations, the authorities, advisers and researchers (Programme interviewee). The farm level interviewee confirmed this direct involvement of farmers.

> Decisions are made by us at the farm or together with OiB, i.e. that how it was managed for the World Water Week. (Host farmer)

Despite those statements though, interestingly, both the programme and the farm level interviewees describe the organisation of demos as an entirely top down approach.

At the farm level, this is also reflected in the host farmer's statement that they are not involved in the development of the overall programme of demonstrations (Host farmer). However, this contradicts the views of the programme interviewee who has described an instrumental role of member/host-farmers both in the development of the overall programme as well as in individual demonstrations.

> Q: Are host farmers involved in the development of the overall demonstration programme? Always - It is their farm, they need to decide. You cannot decide over someone else's farm. It's somebody's business you visit. (Host farmer)
>
> Q: Are host farmers involved in the development of the individual demonstration activities? Always - It is very important that the host farmer is involved. It is their farm. The visitor wants to come to a real farm, with an honest farmer who shows his farm. The farmer must decide what to show up and what the visit should focus on. (Host farmer)

On the other hand, interviewees convey a more coordinated view on how demo topics are selected, as both underline the active engagement of farmers in the process of decision-making.

> It depends on whether it is a demonstration activity with a specific theme or not…Otherwise I decide (Host farmer).
>
> I discuss this with farmers if it is a farmer event. I am also following the media about farming that guides what is the interesting subject… In discussions with farmer, adviser or in discussions with the OiB board. It is common that visitors ask to see something special or are interested in a particular topic as well. (Programme interviewee)

Depending on the demo's objectives and topics, according to the Programme interviewee, beyond the farmers and the manager of the network specific roles may be delegated to other actors such as advisers and researchers, and authorities.

2. Funding arrangements

Finally, with reference to the funding of the demonstrations both interviewees shared their concerns on the limited resources channelled to support/compensate both the relevant activities of the network and host farmers' engagement. Nevertheless, the farm level interviewee provided a wider view of potential benefits, beyond monetary ones, that host farmers might gain through their engagement in demo activities.

> ...Generally there is no payment to the network for arranging the demonstrations. It is part of communication in a project. But this is a problem that there is no payment for the network to arrange the demonstrations on the farm. (Programme interviewee)
>
> Sometimes the visitors pays it, i.e. visitors, but half of the visits we work without compensation. (Host farmer)
>
> It's fun and developing. I think I want to say that. One of the interesting things about being a demonstration farm is that by telling what we do to others, we also look at ourselves with new eyes. (Host farmer)

3. Dissemination material, follow-up and assessment procedures

With reference to the use of dissemination material, basic information on the demo farm are available to participants. At the programme level, this seems to be also the case with regard to follow-up materials, albeit less consistently.

> We usually hand out some kind of information. A paper which some data is a good thing, the visitors will remember things better then. (Host farmer)
>
> Yes, we will issue a paper with basic information about the farm. (Host farmer)
>
> There are some materials on our website. Sometimes we leave leaflets to the participants. (Programme interviewee)

There does not seem to be any formal procedure employed for both feedback collection and the overall assessment of individual and/or overall demonstration activities. The organisation feels that such procedures are more likely to be development in organisations that see demonstration as an income stream, a statement that was reflected also into the host-farmer's views.

> Everybody who participated either by talking, or showing something usually discusses how it seemed after the demonstration (Programme interviewee).
>
> We can feel the result anyway. We don't get any income from the demonstration. If (...) was a business build on demonstration, then we would have asked for feedback regularly (Programme interviewee).
>
> This question does not feel relevant for us. It is not such visits. It would be interesting if we sold demonstration activities for example (Host farmer).
>
> Obviously, I evaluate myself but do not write it on a paper. I am, of course, evaluating and trying to improve me on next visit (Host farmer).

A similar reaction was traced with regard to follow-up activities and /or assessment if the demo has actually triggered any action on behalf of participants because of what they have learned in the demonstrations. Unless this is a formal requirement of a project the demo is part of, the organisation does not take such actions. In the same vein, the host farmer felt that this is not something s/he should be interested in.

This question is for a different category of demonstration farms, than our usual farm business. We are a regular farm organising farm demonstrations (Host farmer).

Normally not, but in a project about energy efficiency, I called farmers and followed up if they have make any changes after the visit Programme interviewee).

If the visitors are part of a project, sometimes we followed up and study if farmers have changed their management in some way due to the demonstration (Programme interviewee).

T2: Farm (event) level

This was a one off event, which was organised as a study visit for participants attending the world water week in Stockholm. The topics of the demonstration were related to the themes of the conference i.e. water management and techniques to reduce/avoid contamination from fertilisers and pesticides.

The event was designed to offer a whole farm approach while at the same time show-cased specific environmental and water management interventions, installations and techniques (observation tool).

There were two demonstrators, the host farmer and the network manager, a farmer himself as well, along with a researcher from the Swedish University of Agriculture who escorted the conference participants to the farm and facilitated the visit (pre-event demonstrator tool; observation tool). The researcher serves also as member of the scientific board of the network (pre-even demonstrator 3). All three are reported to have rich experience both in terms of years active as demonstrators and in number of events they facilitated (20 years and 5-50 events each – pre-event demonstrator tool). Only the researcher stated that s/he had relevant training as demonstrator.

Participants were guided throughout the farm as a whole group (50 people). During this tour they had several stops to observe how buffer zones are installed and managed, how technology can be employed to control the use of fertilisers (yara sensors), and how drainage works with appropriate pods to avoid water contamination from phosphorus. Time constraints, along with the size of the group, did not offer many opportunities for a detailed Q&A and discussions were rather brief (observation tool).

Information/dissemination material/leaflets, which were prepared by the network and University people, were available for participants. Due to the nature of attendees (conference participants) as well as for personal data management reasons (GDPR), no follow-up activities were envisaged. Finally, there were no references to participation fees, nor on any other funding arrangements to compensate farmers and or demonstrators for their engagement in the event (observation tool).

The farmer was compensated for the time to demonstrate and arrange the event.

4. Functional characteristics

T1: Coordinating effective recruitment of host farmers and participants

1. Incentives

There were no financial incentive offered to farmers, however, the Programme Interviewee noted how farmers were rewarded by being part of the project and access to the project results.

2. Motivations for host farmers

The farmer was motivated by the opportunity to develop on the farm, which took shape in various ways. The Farmer felt that providing demonstrations to others allowed for self-reflection and evaluation. The Farmer also expressed an eagerness to showcase the work being done on the farm. The Programme Interviewee offered similar motivations, such as the opportunity to connect with non-rural citizens as well as with other farmers.

> Being able to showcase the operating direction we think is good. We like feedback and questions from others about our production. This visits and visitor can lead to development of us as well (Host farmer)
>
> It's fun and developing. I think I want to say that. One of the interesting things about being a demonstration farms is that by telling what we do to others, we also begin to look at ourselves with new eyes (Host farmer)
>
> They like to meet other people and to show their production and they like the discussion with others. It gives them new ideas and input on their management. They also want to show that they take responsible for the environment and produce in a sustainable way. There is a large distance between citizens and people who lives in the country side. Farmers know that they need to show ordinary sustainable production on farms (Programme interviewee)

3. Motivations for participants

Both the Farmer and Programme Interviewee observed participants' desire to learn from other farmers and communicate from other farmers about their ideas and developments.

> They are interested in learning how others [farmers] are doing (Host farmer)
>
> Farmers want to see and hear how other farmers do. They are interested to hear about innovations, and it is always interesting to talk about the crops development each season and the latest advices about pesticides, efficient fertilisation (Programme interviewee)

4. Target audience

The Programme Interviewee listed farmers, consumers, student, authority figures and researchers as their target audience. The Farmer added that most visitors come from the agricultural university (SLU), but some events have managed to reach a foreign audience.

> Most visitors we have had have been student from the Swedish University of Agriculture, SLU, but we have had some foreign farmers who looked at several farms in Sweden (Host farmer)
>
> Farmers, consumers, student, authority, researcher (Programme interviewee)

5. Advertising and recruitment

Generally, visitors are specifically invited to a particular event. The Programme Interviewee considered the most effective form of recruitment was to host an event that people would really want to attend.

> 'Sometimes targeted' - In most cases, all visitors are specially invited. It can be about showing project results or offering a special event for a particular group (Programme interviewee)
>
> To invite targeted people with a personal invitation and to arrange an interesting event, with both demonstrator with practical, and theoretic background. It is important that the farmers are very active. Visitors want to meet real farmers in on a real farm (Programme interviewee)

T2: Appropriate demonstration and interaction approaches

1. The nature of interaction

Both Farmer and Programme Interviewee described the nature of interaction as 'entirely top-down', with the Farmer emphasising that the point of the day is to teach visitors about the farm, not to leave them questioning or coming to their own conclusions about it.

The Programme Interviewee described the nature of interaction as 'Entirely top-down'. He continued: 'The goal of OiB is to work for a holistic approach about sustainability and agriculture. Our motto is ecology and economy in balance'. (Programme interviewee), i.e. the purpose of the programme is to share a central ethos.

2. Involving farmers in the learning process and the demonstration programme

Host farmers were involved in both the network programme and individual demonstrations. This was seen as an important aspect by the Programme Interviewee, who noted that visitors want to see a real working farm and the farmer is in the best position to decide how to show this.

> It is very important that the host farmer is involved. It is their farm. The visitor wants to come to a real farm, with an honest farmer who shows his farm. The farmer must decide what to show up and what the visit should focus on. (Programme interviewee)

Participating farmers were not involved in the network programme or individual demonstrations. All topics were decided on with host farmers, advisers and the OiB board. Although the Programme Interviewee did note that visiting farmers often request to see something particular during the day.

> Demonstration topics are decided on ... In discussions with farmer, adviser or in discussions with the OiB board. It is common that visitors ask to see something special or are interested in a particular topic as well. (Programme interviewee)

3. Focus

Both the Farmer and Programme Interviewee described the network as taking a 'whole farm' approach.

4. Design

The Farmer described the network as exhibiting 'exemplary' practices, and expressed a preference for this as he considered it to have the strongest impression on the visitors.

> That's what makes the visit most effective for the visitor. But there are degrees in this. To see something that someone else have done. Then there may be interesting research as well. (Host farmer)

The Programme Interviewee, on the other hand, viewed the network's approach as being 'a mixture' between exemplary and experimental practices, and considered this to be the best approach as it incorporates holistic

issues and technical details. He also added that a mix between practical experience (from the farmer) and scientific findings were good.

> A mix between holistic issues and technical details is good. It is also good to have both the practical view of from the farmer and to show scientific experiments at the farm. (Programme interviewee)

5. Ideal group size

The Farmer and Programme Interviewee considered between 10-15 people to be the optimal group size, as this allowed everyone to hear and ask questions easily.

> A group of ten is a good group. Then everyone dares to ask questions and can see and hear. (Host farmer)
>
> Around 15. (Programme interviewee)

T3: Enabling learning appropriate to purpose, audience, context

1. Facilitating interaction and learning: structure, content and techniques

Both considered a mixture between a verbal presentation and time in the field with a practical activity to be the optimal design for the day. The Programme Interviewee added that having time for coffee or a shared meal can add to the effectiveness of the day. There was no mention of additional materials being used to assist the learning.

> I start by talking a little bit first and then we go and look in the field (Host farmer)
>
> A balance between presentations, time for questions, field visits, and also practical activity. A friendly and open atmosphere are important. Coffee or meal could also be essential to make the visit effective (Programme interviewee)

Both Farmer and Programme Interviewee cited 'participants ask questions and talk openly' as the most important tool for providing effective demonstrations.

> It is obviously, if you get questions it is most important. I choose the alternative "to ask questions" as the first option (Host farmer)
>
> Everybody who participated either by talking, or showing something usually discusses how it seemed after the demonstration (Programme interviewee)

2. Taking into account variation in learning

The Farmer did not take in to account variations of learning when delivering demonstrations. However, the Programme Interviewee did take time to find out who the visitors were and what they were expecting from the day prior to arrival.

> No, they must take care of themselves (Host farmer)
>
> I always find out who the visitors are and sometimes what they expect from a farm demonstration (Programme interviewee)

T4: Effective follow-up activities

1. Follow-up activities and materials

In general there was no continued engagement with participants after the event, although the Programme Interviewee did cite a particular project in which farmers' behaviour after the event were followed up.

> Normally not, but in a project about energy efficiency, I called farmers and followed up if they have make any changes after the visit (Programme interviewee)

There were some follow-up resources available on the network website; however no materials were available at the farm level.

> There are some materials on our website. Sometimes we leave leaflets to the participants (Programme interviewee)

2. Assessing impact

There was little done in regards to assessing the impact of events on participants. The Farmer played no part in this although did add that it would be exciting to do so. At the network level, there is occasionally a follow-up study on participants changing behaviour, but this will only be in the participants are part of a specific projects. There was no attempt by either at the farm level or programme level to assess the impact on the wider farmer community.

> If the visitors are part of a project, sometimes we followed up and study if farmers have changed their management in some way due to the demonstration (Programme interviewee)

5. Event analysis: effective peer learning characteristics

T1: Learning processes

1. Communication initiation by participants

When in the whole group not more than 10% of the participants hesitated but shared their knowledge and/or experiences related to the topic. There were little interactions between them. There was not much time for that during the visit. Presumably, they talked to each other more in the bus on their way back to Stockholm. They were only in one large group, never in smaller groups on purpose. A little time was made for questions, about 2% of the time, some (5-10) questions were asked. There was no time for more questions at the farm, but some questions were asked on the bus on the way back. There were a few participants trying to formulate their own points of view regarding the topic. For example, there was a man from Colombia, he was very impressed about the OiB concept and how it worked. He asked about how he could come back and send farmers to Sweden to learn more about management and how to take care about the environment in Colombia. For example, they could learn more about building a phosphorous pond etc. Many of the visitors were very impressed by the flowering buffer strips. They expressed that this is something they could do at home.

2. Interactive knowledge creation

Hands-on opportunities and other multi-sensorial experiences

Two hands-on activities were demonstrated and could be carried out by the participants, but only very shortly. At the SamZon, the buffer zone in the field, the demonstrator asked everyone to be silent and to listen to the bees that were working in the field. This was a nice experience. Many bees were out and flew from flower to flower. Additionally, when the group visited the solid fuel boiler for drying grain, everyone was asked to touch the pellets that were used in the boiler.

Discussion opportunities and negotiating conflicting points of view

There was a facilitator, but she was not so active in facilitating discussions. She was mostly responsible for the time schedule. The visit event had a very tight schedule. Open discussions between a few participants were stimulated. It was a discussion about how to implement new ideas at farms. There was no elaboration/further explanation on shared critical points of view since there was no time for that.

3. Engagement during the event

Participants act more distant then open. They did not know each other. Some knew each other from before and acted more as friends with each other. Everyone was very polite. The demonstrators were open and very friendly towards the participants.

T2: Learning outcomes

Explained knowledge was sufficiently understandable, but the group was very diverse and came from very different places in the world. This made it not easy to know if it was sufficiently described. The background, knowledge, and experience were probably very diverse. Skills were addressed, but it was hard to say if it was sufficient or not. Time was very short. Common methods or ways of thinking on farming and on learning were questioned, but there was no real elaboration on alternatives. There was no time for further elaboration. One of the visitors (from South Africa) asked how the OiB network worked with farmers to inspire them to adopt new management systems. After that there was a small discussion about this topic. The OiB manager

expressed her believe that it is really effective when farmers meet other farmers. The reason for that it is a mutual trust between farmers.

T3: Overall comments on the effectiveness of the event

The biobed was shown and explained. The manager of OiB told the visitors where to find a free description on how to build one on a farm. This is a cheap and easy solution. Since the visitors were at a water conference and the central issue was about supplying farmers and society with clean water, many of the visitors were very interested about this.