Testing field plow (Lanat)

Soil support program for conservation agriculture (Suisse)

Förderprogramm Boden des Kantons Bern

DESCRIPTION

Through the soil support program land users get subsidies for applying conservation technologies on their fields during a period of 6 years.

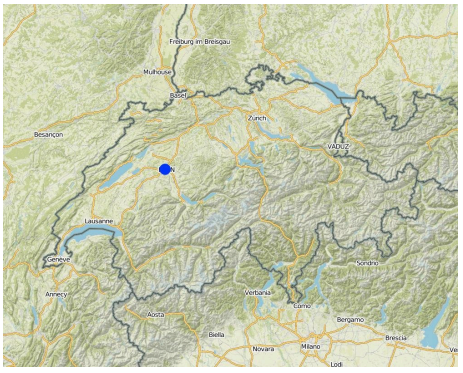
Aims / objectives: The aim of the office of soil protection is to enhance the implementation of conservation agriculture technologies by swiss land users. Therefore land users can test different technologies for 6 years within the soil support program. For each technology and method they apply they get paid by the government. Thus the functional character of soil and the soil biology are preserved, soil erosion and soil compaction are prevented and production of ammoniac is reduced.

Methods: The aims named above can be reached by implementing conservation agriculture technologies such as direct seeding or mulching. Therefore, land users get a financial incentive for using and implementing such technologies on their own fields. They apply for a period of 6 years to use conservation technologies. At the beginning, at least two different technologies must be chosen. There are different technologies in the field of soil protecting cropping systems, soil composition and ammoniac reducing spreading systems. Moreover, the office of soil protection has its own testing fields where land users get an overview over the different technologies and can then decide on which method they want to apply. After a land user gets a contract, planning and details about the technology and the process of implementation are discussed separately with an advisor of the program.
A database with all information necessary for land users and controlling institutions is also granted by the office. Controllers of the local government must check the field and the implementation of the technologies of a participant land user at least once a year.

Stages of implementation: The soil support program of the Canton Bern is an extension of a previous program. Results of this previous program showed that regarding soil pollution, soil erosion and loss of nitrogen agricultural production can even be improved when using conservation technologies. Through a new agricultural policy in 2007 government is able to provide financial support for projects enhancing protection of natural resources. The soil support program was then approved 2008 and started its 6-year program in 2009. To promote this project different descriptions were made in press and media, a homepage was launched and through soil days and public speeches information was spread under land users.
When implementing a conservation technology land users get advice and consultations directly through advisors in order to provide as much information and help as possible.

Role of stakeholders: Land users are the most important group of stakeholders. They need to apply to the program and change their cropping system and implement conservation technologies. At the beginning there are many critics among them who don't trust conservation technologies to be as effective and productive as their traditionalist ones. Land users open to a change and concerning the benefit for natural and biological environment apply to the program. It is very important to involve land users and their views and concerns into the process of planning after the contract but also even at the very beginning of the

LIEU



Lieu: Canton Bern, Suisse

Géo-référence des sites sélectionnés

- 7.43518, 46.94927

Date de démarrage: 1993

Année de fin de l'Approche: 2015

Type d'Approche

- ☐ traditionnel/ autochtone
- ☐ initiative/ innovation récente locale
- ☑ fondé sur un projet/ programme

program. If technologies are not compatible with their views they are not going to fully implement a technology and keep it after the program.
Advisors are employed by the program administration. It is their job to provide help to the land users. They are most important in the beginning when a land user chooses his conservation technology. They are on field together with the land user and discuss the best possible technology for the land user. To find the appropriate technology is always a tricky task.
Government and local government play the crucial role of money lenders and supervisors. Representatives of the local government need to check a land user and the application of his conservation technology at least once a year. If it is approved government provides the payment in form of subsidies for the conservation technology applied by the land user. This amount differs from technology to technology.

Testing field plow (Lanat)

OBJECTIFS DE L'APPROCHE ET ENVIRONNEMENT FAVORABLE

Principaux objectifs de l'Approche
The Approach focused mainly on SLM with other activities (water and air pollution, biodiversity, rethinking agricultural practises)

The main aim of the program was to implement conservation technologies into the livelihood of swiss land users. Because of financial incentives land user even get subsidies for implementing a conservation technology on their fields. The other objective not only of the project was to get land users to overthink their traditional view of agriculture and to focus more on the conservation of natural environment and especially soil. Through the project land users shall be encouraged to carry on with the conservation technology they applied in the project. Thus, the main aims focus especially on the implementation and continuation of sustainable land use technologies in swiss agriculture.

The SLM Approach addressed the following problems: Das Hauptproblem zu Beginn des Projekts war die Unwissenheit der Bauern. So kam es teilweise zu Ernteverlusten durch falsche Anwendung einer Massnahme. Zudem ignorierten einige Bauern die Vorschriften des Programms, vor allem bei der Fruchtfolge. Eine Befolgung dieser Vorgaben ist jedoch unerlässlich für die erfolgreiche Einführung einer Massnahme und deren Gelingen. Ein nächstes Problem war der Einsatz von Glyphosat bei der Anwendung von Direktsaat. Dieses Herbizid wird auch in der breiten Bevölkerung nur gering toleriert. Ein letztes Problem waren schliesslich die traditionellen Ansichten einiger Bauern, welche wie ihre Väter und Grossväter nach Ablauf der 6 Jahre zurück auf ihre traditionellen Anbauverfahren wechselten. Hier konnte das Projekt nicht den gewünschten Erfolg erzielen.

Conditions favorisant la mise en oeuvre de la/(des) Technologie(s) appliquée(s) sous l'Approche

Conditions entravant la mise en oeuvre de la/(des) Technologie(s) appliquée(s) sous l'Approche
- **Normes et valeurs sociales/ culturelles/ religieuses** : Traditionelle Ansichten der Bauern waren zu Beginn ein Hindernis. In der Schweizer Mentalität soll alles sauber und ordentlich sein, so auch auf dem Feld. Treatment through the SLM Approach: Unterstützung durch Berater und Hilfe. Man kann Bauern nicht zur Weiterführung einer Technologie zwingen aber sie von den Hauptvorteilen überzeugen. Sie müssen selbst die Vorteile sehen.
- **Disponibilité/ accès aux ressources et services financiers**: Zu Beginn sind grössere Ausgaben notwendig, bspw. für die Maschine/Lohnunternehmer und generelle Umstellung. Treatment through the SLM Approach: Man zeigt den Bauern auf, dass nur zu Beginn mehr Kapital benötigt wird. Nach dem Wechsel zu einer konservierenden Technologie ist die Umstellung sehr profitabel und weniger Kapital als bei konventioneller Bodenbearbeitung ist notwendig.
- **Cadre institutionnel**: Institutionen und Vereine wie etwa die Pflanzenschutzfachstelle waren zu Beginn gegen das Programm, weil es den Einsatz von Glyphosat und anderen Herbiziden fördert. Auch der Bildungssektor (Bauernschule) war skeptisch gegenüber der neuen Technologien und deren Erfolg. Treatment through the SLM Approach: Es war wichtig, die Institutionen davon zu überzeugen, dass die Einführung einer Technologie nicht den Einsatz von Glyphosat vergrössern wollte, sondern das Ziel hatte, bodenschonende Anbauverfahren einzuführen. Diese sind jedoch an den Gebrauch von Glyphosat gebunden. Bauern sind hierbei jedoch selbst für die richtige Menge und den

nachhaltigen Einsatz von Glyphosat verantwortlich. Zudem wurden mit Feldbegehungen und Diskussionseinladungen Zweifel und Ängste beseitigt.

- **Connaissances sur la GDT, accès aux supports techniques**: Es müssen unter Umständen neue Geräte angeschafft werden, die sehr kostspielig sind. Meist ist es jedoch lohnenswerter einen Lohnunternehmer für die Direktsaat zu beauftragen. Treatment through the SLM Approach: Für die Anschaffung von Geräten und allgemeinen finanziellen Investitionen wird das Gespräch mit der Familie des Bauern (v.a. der Ehefrau) gesucht. Berater zeigen auf, welche technischen Geräte notwendig sind, wann es sich lohnt einen Lohnunternehmer zu beauftragen und welche Geräte nicht mehr notwendig sind (und allenfalls verkauft werden können).

PARTICIPATION ET RÔLES DES PARTIES PRENANTES IMPLIQUÉES DANS L'APPROCHE

Parties prenantes impliquées dans l'Approche et rôles

Quels acteurs/ organismes d'exécution ont été impliqués dans l'Approche?	Spécifiez les parties prenantes	Décrivez le rôle des parties prenantes
exploitants locaux des terres / communautés locales	Swiss agriculture is dominated by men. Also the advisors and program leaders were mainly men. The decision of implementing a conservation technology however is made by both the land user and his wife who is an important stakeholder as well. Overall, the participation was dominated by men.	
Spécialistes de la GDT/ conseillers agricoles		
ONG	LOBAG, LONZA, BFO, Swiss No-Till	
secteur privé	Seed and fertilizer companies	
gouvernement local	Canton of Bern	
gouvernement national (planificateurs, décideurs)	Federation	

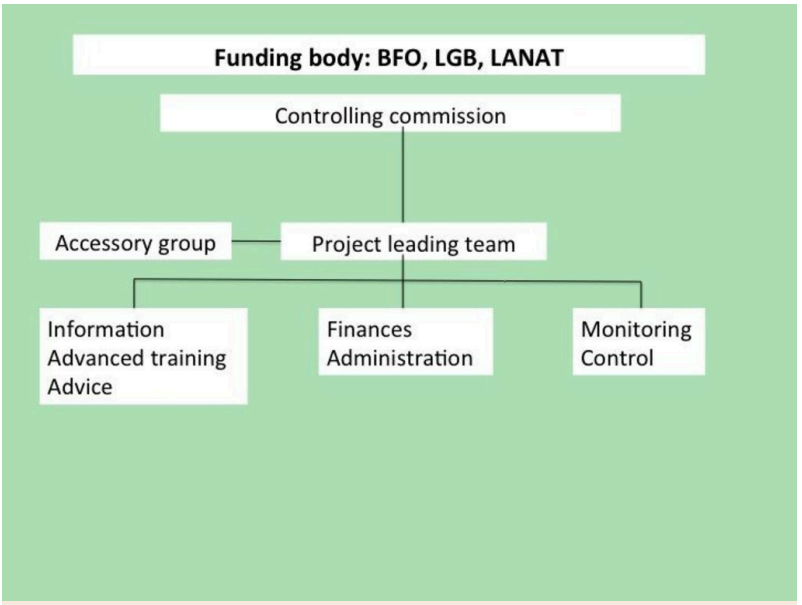
Participation des exploitants locaux des terres/ communautés locales aux différentes phases de l'Approche

Land users need at first to be convinced to implement the technologies an take part in the program.

Land users need to implement the conservation technologies. They get help and support from advisors of the program and get paid for implementing a conservation technology by the federal government.
Land users are part of the monitoring because they reflect themselves and the technology they apply at every stage as well. However, it is the controllers of the local government who evaluate the technology and the application on the field.
For more information on the implementation and experience of the land users who applied conservation technologies, their part in the phase of research is definitely active. Interaction between research and land users takes place during workshops or field trips. Land users get also more and more interested in research results.

Diagramme/ organigramme

Organisation chart of the soil support program of the Canton of Berne



Auteur : VOL Volkswirtschaftsdirektion Kanton Bern

Prises de décision pour la sélection de la Technologie de GDT

Les décisions ont été prises par

- [ ] les exploitants des terres seuls (auto-initiative)
- [ ] principalement les exploitants des terres soutenus par des spécialistes de la GDT
- [ ] tous les acteurs concernés dans le cadre d'une approche participative
- [x] principalement les spécialistes de la GDT, après consultation des exploitants des terres
- [ ] les spécialistes de la GDT seuls
- [ ] les responsables politiques/ dirigeants

Les décisions ont été prises sur la base de

- [ ] l'évaluation de connaissances bien documentées en matière de GDT (prises de décision fondées sur des preuves tangibles)?
- [ ] les résultats de recherches?
- [ ] expériences et opinions personnelles (non documentées)

SOUTIEN TECHNIQUE, RENFORCEMENT DES CAPACITÉS ET GESTION DES CONNAISSANCES

Les activités ou services suivants ont fait partie de l'approche

- [x] Renforcement des capacités/ formation
- [x] Service de conseils
- [x] Renforcement des institutions (développement organisationnel)
- [x] Suivi et évaluation
- [x] Recherche

Renforcement des capacités/ formation

La formation a été dispensée aux parties prenantes suivantes

- [x] exploitants des terres
- [x] personnels/ conseillers de terrain

Formats de la formation

- [x] sur le tas
- [x] entre agriculteurs (d'exploitants à exploitants)
- [x] zones de démonstration
- [x] réunions publiques
- [x] cours

Sujets abordés

Mainly the training of implementing soil conservation technologies got very interesting for the land users. They participate more frequently on trainings than they have to. They learn how to protect their field from erosion by water, when to best cultivate their fields and much more in order to successfully apply a conservation technology.

Service de conseils

Le service de conseils était fourni

- [x] dans les champs des exploitants?
- [ ] dans des centres permanents

Name of method used for advisory service: Annual meetings; Key elements: technical support, planning of crop rotation and conservation technology, monitoring

Advisory service is very adequate to ensure the continuation of land conservation activities

Renforcement des institutions

Institutions ont été renforcées ou mises en place

- [ ] non
- [ ] oui, un peu
- [x] oui, modérément
- [ ] oui, beaucoup

au niveau suivant

- [x] local
- [ ] régional
- [ ] national

Décrivez l'institution, ses rôles et responsabilités, ses membres, etc.

Type de soutien

- [ ] financier
- [ ] renforcement des capacités/ formation
- [x] équipement

Plus de détails

Mainly contractor companies were highly supported because of the conservation technologies which required special technical equipment which was provided by them.

Suivi et évaluation

bio-physical aspects were regular monitored by project staff through observations; indicators: None technical aspects were regular monitored by project staff through observations; indicators: None economic / production aspects were ad hoc monitored by land users through observations; indicators: None area treated aspects were regular monitored by project staff, government through measurements; indicators: None no. of land users involved aspects were regular monitored by project staff, government through measurements; indicators: None management of Approach aspects were regular monitored by project staff, government through observations; indicators: None There were few changes in the Approach as a result of monitoring and evaluation: The aim of reducing the amount of glyphosate came up frequently during the application of conservation technologies. There were few changes in the Technology as a result of monitoring and evaluation: None

Recherche

La recherche a traité les sujets suivants

- [ ] sociologie
- [ ] économie/ marketing
- [x] écologie
- [x] technologie

Different professors of international universities provided important basic informations: John Baker (NZL), Karlheinz Köller (Hohenheim). Also the University of Bern and the technical college provided information on conservation technologies and their implementation

Research was carried out both on station and on-farm

FINANCEMENT ET SOUTIEN MATÉRIEL EXTERNE

Budget annuel en dollars US de la composante GDT

- [ ] < 2 000
- [ ] 2 000-10 000
- [ ] 10 000-100 000

Approach costs were met by the following donors: government (Swiss federal government):

Les services ou mesures incitatives suivantes ont été fournis aux exploitants des terres

- [x] Soutiens financiers/ matériels fournis aux exploitants des terres
- [ ] Subventions pour des intrants spécifiques

☐ 100 000-1 000 000
☑ > 1 000 000
Precise annual budget: sans objet

80.0%; local government (district, county, municipality, village etc) (Canton of Berne): 20.0%

☐ Crédits
☐ Autres incitations ou instruments

Soutiens financiers/ matériels fournis aux exploitants des terres
Contributions were provided by the federal government. This was part of the Approach.

ANALYSES D'IMPACT ET CONCLUSIONS

Impacts de l'Approche

	Non	Oui, un peu	Oui, modérément	Oui, beaucoup
Est-ce que l'Approche a aidé les exploitants des terres à mettre en œuvre et entretenir les Technologies de GDT? Land user are more conscious about the protection of soil and its functions. No-tillage as a form of sustainable land management was successfully implemented and has good chances of perpetuation. Land users keep the diversity of soils and its structure, prevent soil compaction and have less work to do by applying conservation agriculture. There is also less money and financial capital required.	☐	☐	☐	☑
Est-ce que l'Approche a autonomisé les groupes socialement et économiquement défavorisés? No socially and economically disadvantaged groups were involved.	☑	☐	☐	☐
Did other land users / projects adopt the Approach? Mostly land users open to new technologies and with regard to protection soil and soil erosion adopted the Approach. Neighborhood is also an important factor: if a land user near an other succeeds in applying a conservation technology and getting the benefits of it, it is likely that the other land user adopts the technology for himself.	☐	☐	☑	☐

Principale motivation des exploitants des terres pour mettre en oeuvre la GDT

☐ augmenter la production
☑ augmenter la rentabilité/ bénéfice, rapport coûts-bénéfices
☐ réduire la dégradation des terres
☐ réduire les risques de catastrophe
☐ réduire la charge de travail
☑ paiements/ subventions
☐ règles et règlements (amendes)/ application
☐ prestige, pression sociale/ cohésion sociale
☐ affiliation à un mouvement/ projet/ groupe/ réseaux
☑ conscience environnementale
☐ coutumes et croyances, morale
☐ améliorer les connaissances et compétences en GDT
☐ améliorer l'esthétique
☐ atténuer les conflits

Durabilité des activités de l'Approche
Les exploitants des terres peuvent-ils poursuivre ce qui a été mis en oeuvre par le biais de l'Approche (sans soutien extérieur) ?

☐ non
☑ oui
☐ incertain

The land users know very much about the conservation technologies and the application of these after the program. They also know which technology is best for their fields. Therefore, they can continue the Approach activities without support. However, the most important reason for the land users to continue is their will to do it. If a land user does not see the difference and is not fully willing to continue he will not do so even if there are subsidies for conservation agriculture.

CONCLUSIONS ET ENSEIGNEMENTS TIRÉS

Points forts: point de vue de l'exploitant des terres

- With the program land users get to know how important it is to protect their soils against different types of degradation. The Approach helps to implement technologies to keep soil fertility alive on a longterm view which is highly important. (How to sustain/ enhance this strength: The knowledge of possibilities to protect agricultural fields must be spread even further under land users. Conservation technologies can be applied by every land user no matter how their fields are composed of.)
- The program and its conservation technologies can provide some protection against future problems to be concerned with climate change. Because soil can keep more water and its storage capacity is enhanced through conservation agriculture, soil can take and hold the water for a longer time. If there is a dry period soils under conservation technologies are less likely to dry out than conventional fields. (How to sustain/ enhance this strength: The storage capacity of soils is an important character of soils and must therefore be protected which means root penetration must be sustained.)
- When applying conservation technologies, soil is more tolerant to previous dangerous factors like heavy machines. Therefore, great and heavy machines used for conservation agriculture do not provide a risk for compaction to soils. (How to sustain/ enhance this strength: With the application of conservation technologies there are also new possibilities associated like using heavy agricultural machines without compaction. These advantages must also be noticed when debating the benefit of conservation agriculture.)

Faiblesses/ inconvénients/ risques: point de vue de l'exploitant des terrescomment surmonter

- There are higher costs at the beginning for conservational agriculture than for conventional agriculture. New machines or contractors are needed to cultivate the fields. Higher costs at the beginning can not directly be overcome. But it must be mentioned that there will be lower costs after the beginning and that the implementation of a conservation technology on a longterm base is profitable.
- There is much working effort needed in the beginning for implementing and applying a new technology. The benefit may not always be seen. Land users themselves must see the advantages even when they need to do more at the beginning. The relationship with other land users and the support of the family plays also a crucial role here. The Approach itself just provides an overview of the advantages and gives advice to the land user.
- Compared to the number of total land users in the Canton of Bern or Switzerland itself, conservation agriculture is practiced only by about 3%. This number is far too low. The program can not be unlimited to all land users because of the financial subsidies. It could however be stretched to other Cantons to provide a similar program. But this might be very difficult because of the financial resources. Conventional agriculture must therefore get more attention in public and in politics.

Faiblesses/ inconvénients/ risques: point de vue du compilateur ou d'une autre personne-ressource clécomment surmonter

- The number of applicants is limited by the project. Compared to the total number of land users in Canton Bern there are just few participants to the program. The conditions for participation could

Points forts: point de vue du compilateur ou d'une autre personne-ressource clé

- With the soil support program land users learn how to best treat and cultivate their fields. The Approach has the advantage that conservation technologies can be applied for each land user individually which means that not every conservation technology is suitable for each land user. The individual solutions for a land user which are possible are a great strength. (How to sustain/ enhance this strength: The diversity of conservation technologies must be sustained in order to provide a great range of different possibilities for the land user. Not every field provides the best conditions for a certain technology.)
- Land users and their advisors know each other most of the time quite good because advisors themselves come from the agricultural sector. This provides an atmosphere of familiarity which is positive for both of the stakeholders. Problems and ideas can be openly discussed. (How to sustain/ enhance this strength: Advisors must have an agricultural background in order to understand land users and their problems and struggles. With the same knowledge base solutions can be better found and a good working atmosphere is provided.)
- The support provided by the advisors and the project staff is excellent. Land users get a lot of technical, bio-physical and environmental knowledge from them which they can transfer to their practices. The continuation after the 6 year's duration of the program is therefore mostly granted by the immense support for the land users. They get encouraged to continue conservation technologies and do it because they feel good and strengthened after 6 years of training and practice. (How to sustain/ enhance this strength: Support at the different stages and on different places must be guaranteed. It gives land users and the program itself much confidence of fulfilling the aims.)

be reduced for land users. This would probably lead to more participants. However, more participants require more subsidies and therefore the costs increase. If government would approve of this is therefore doubtful.

RÉFÉRENCES

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Date de mise en oeuvre: 13 mai 2015

Dernière mise à jour: 7 juillet 2017

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Description complète dans la base de données WOCAT
https://qcat.wocat.net/fr/wocat/approaches/view/approaches_2525/

Données de GDT correspondantes
Technologies: Direct seeding https://qcat.wocat.net/fr/wocat/technologies/view/technologies_1007/
Technologies: Maize strip tillage https://qcat.wocat.net/fr/wocat/technologies/view/technologies_1006/
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La documentation a été facilitée par

Institution
- CDE Centre for Development and Environment (CDE Centre for Development and Environment) - Suisse

Projet
- Preventing and Remediating degradation of soils in Europe through Land Care (EU-RECARE)

Références clés

- VOL (Volkswirtschaftsdirektion des Kantons Bern) 2009: Bodenbericht 2009: Bodenfachschutzstelle des Kantons Bern, Rütti, 3052 Zollikofen