

## GERMANY

Improving water  
management, including  
fertiliser and pesticide  
management

### Location

Baden-Württemberg

### Programming period

2014 – 2020

### Priority

P4 – Ecosystems  
management

### Measure

M10 – Agri-environment-  
climate

### Funding (EUR)

Total budget 6.4 mil  
EAFRD 3.5 mil  
National/Regional 2.9 mil

### Project duration

2014 – 2020

### Project promoter

Ministry of agriculture and  
consumer protection Baden-  
Württemberg

### Contact

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### Website

[www.landwirtschaft-bw](http://www.landwirtschaft-bw)

**Catch crops supported by the AEC measure in Baden-Württemberg play a key role in reducing the nitrate level in the region.**

## Summary

The incorporation of catch crops into the crop rotation of farms is associated with a variety of agronomic and environmental benefits. All these advantages have led to the cultivation of catch crops being recognised as an "ecological priority area" in the 1<sup>st</sup> Pillar of the CAP and their funding through agri-environmental programmes in several federal states of Germany.



In Baden-Württemberg catch crops are part of the support scheme for agri-environment, climate protection and animal welfare (*Förderprogramm für Agrarumwelt, Klimaschutz und Tierwohl – FAKT*) of the rural development programme. The sub-measure E.1.2 "Greening mix in agriculture and horticulture" provides farmers 90 EUR per ha.

## Results

In 2017, around 1 300 farmers with 13 000 ha committed to this type of operation in return for around 1.17 million EUR of public money.

## Lessons & Recommendations

- When selecting mixtures, the basic considerations regarding location and crop rotation should be taken into account.
- Sowing should be carried out as soon as possible after clearing the pre-crop with the seeder.
- Sowing with a centrifugal spreader is not recommended because of the danger of segregation and the increased risk of insufficient catching by the catch crop.
- The sowing recommendations of the mix providers should not be undercut.
- Improved rooting and crumbling of the soil after catch crops mixes makes it easier to apply reduced soil tillage practices in comparison to pure catch crops.
- To promote soil life, it is preferable to roll or mulch the catch crop mix and mixed incubation instead of ploughing the still standing green crops

## Context

Through the cultivation of catch crops, nutrients are conserved in the biomass over winter and thereby their leaching into the groundwater is prevented. Therefore, they become available to the subsequent crop. Catch crops also reduce water erosion and thus the entry of nutrients and pesticides into surface waters. When planting legumes, nitrogen is also fixed, which is used by the following crop.

By rooting and increasing the biological activity, the soil structure, the humus balance and thus the soil fertility are improved. Targeted catch crop cultivation can also contribute to weed and pathogens control. From an ecological point of view, biodiversity on arable land is increasing, mainly due to the diversity of species in the planting mix, but also due to the creation of habitat for wildlife and flower pollinators.

Last but not least, the landscape is enhanced by flowering plants in autumn and the intensively used arable landscapes is upgraded.

Although nitrate levels in Baden-Württemberg are decreasing due to the implementation of agri-environmental measures, they are still too high. Wherever the legally prescribed values are exceeded, regulatory measures are used.

## Objectives

The aim of the project is to apply sustainable production methods that improve the natural and economic production conditions of farms, by maintaining catch crops or subsets in agriculture. The funding is offered at all farm locations and covers larger areas after the grain harvest in autumn.

## Activities

The research institution of the federal state of Baden-Württemberg 'Landwirtschaftliches Technologiezentrum Augustenberg' (LTZ) carries out research on catch crops. Based on this research the action was conceived by the ministry of agriculture and consumer protection.

For greening, only approved seed mixtures containing at least five components are used. Sowing has to be carried out till the end of August, while the use of crops growth boosters is prohibited. The only exception is to allow grazing by migrant shepherds. The mulching/incorporation of the growth is not allowed before the end of November. The use of herbicides to eliminate growth is also not permitted – i.e. the growth must freeze off or has

to be mechanically processed.

Farmers can participate voluntary in this type of operation 'Catch crops for agriculture and horticulture'. They are requested to cover with catch crops a certain number of hectares of arable land for five years. According to their crop rotation, they determine a certain seed mixture out of the allowed seed mixtures. Farmers have to comply with the scheduling and production rules concerning cultivation, crop protection and harvesting. The contracted area can rotate each year and is not restricted to a certain parcel of land.

Since farmers have higher variable costs for implementing this measure compared to a reference procedure, they receive a premium of 90 EUR per hectare per year. This is granted if the farmers comply with the eligibility conditions and management requirements. This is checked as part of an administrative check and, if necessary, an on-the-spot check will be performed.

An example of an approved seed mixture is presented below:

	Weight	Thousand-kernel weight (g)	Seed content (%)
Berseem clover ( <i>Trifolium alexandrinum</i> )	4	3	34
Field pea ( <i>Pisum sativum subsp. arvense</i> )	62	160	10
Seed vetches ( <i>Vicia sativa</i> )	24	60	10
Bristle Oat ( <i>Avena strigosa</i> )	7	23	8
Phacelia ( <i>Phacelia tanacetifolia</i> )	3	3	38

For public relation reasons farmers are invited to install the below information plate at their field borders:



**Zwischenfrüchte in ihrer Vielfalt**

**Was sehen Sie hier?**  
Hier wurde nach Ernte der Hauptfrucht eine Zwischenfrucht ausgesät. Zwischenfrüchte leisten einen vielfältigen Beitrag zum Wasser- und Bodenschutz und wirken sich positiv auf den Ackerbau und die Biodiversität aus. Acker mit Zwischenfrüchten bieten Wildtieren einen Lebens- und Rückzugsort. Durch die späte Blüte im Jahr bereichern sie zudem das Landschaftsbild und erhöhen Erholungssuchende. Im Frühjahr wird dann die nächste Hauptkultur eingesät, z. B. Mais.

**Warum ist Zwischenfruchtanbau so wichtig?**  
Zwischenfrüchte entziehen dem Boden viel Nitrat-Stickstoff und konservieren ihn über Winter in der Pflanze. So wird der Nitrat-eintrag ins Grundwasser verringert. Durchwurzeln verbessert die Bodenstruktur. Nährstoffe werden durch Wurzelabsonderungen besser verfügbar. Zwischenfruchtbestände können vor allem in Hanglagen Bodenabtrag vermindern. Leguminosen wie Erbsen oder Wicken sammeln Stickstoff aus der Luft. Dieser steht dann der Folgekultur zur Verfügung.

**Wie unterstützt das Land den Zwischenfruchtanbau?**  
Das Land Baden-Württemberg unterstützt im Rahmen des Förderprogramms für Agrarumwelt, Klimaschutz und Tierwohl (FAKT) gezielt die Ansaat von Zwischenfrüchten. Weitere Informationen zum Thema Zwischenfrüchte erhalten Sie bei Ihrem Landratsamt - Untere Landwirtschaftsbehörden oder unter [www.ltz-augstenberg.de](http://www.ltz-augstenberg.de).

Impressum: Landwirtschaftliches Technologiezentrum Augustenberg (LTZ), Pöhlstraße 11, 72217 Karlsruhe, Tel.: 07243481, [post@ltz.de](mailto:post@ltz.de), [www.ltz-augstenberg.de](http://www.ltz-augstenberg.de), Redaktion: Stefan Zank, Peter De Koeck, Lorenz Jörg Jank

**ltz** Landwirtschaftliches Technologiezentrum Augustenberg

Baden-Württemberg

## Main Results

Catch crops or under-crops that are ploughed only in late autumn contribute to:

- Protecting groundwater by reducing nutrient inputs from arable land;
- Protecting surface water from nutrient inputs by reducing soil erosion and promoting soil life and improving soil fertility;
- Reducing soil erosion through the greening mixtures and through the active root system of stubble/under-crops, and reducing nutrient inputs into the groundwater; and
- Providing additional food and shelter to insects and other wildlife.

In 2017 around 1 300 farmers with 13 000 ha committed to this type of operation in return for about 1.17m EUR of public money.

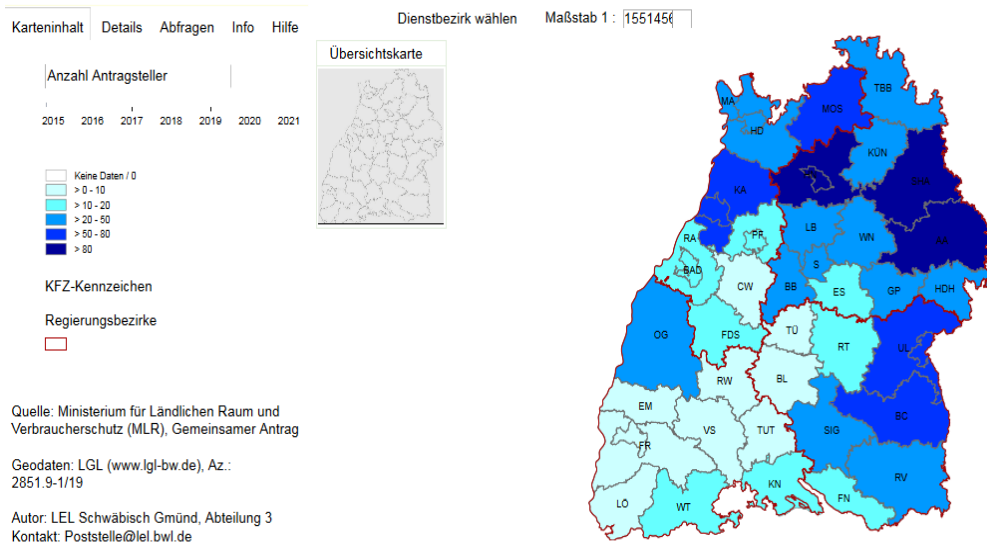
## Key lessons

Recommendations for sowing, crop rotation and incubation:

- When selecting mixtures, the basic considerations regarding location and crop rotation should be taken into account.
- Sowing should be done as soon as possible after clearing the pre-crop with the seeder.
- Sowing with a centrifugal spreader is not recommended because of the danger of segregation and the increased risk of insufficient catching by the catch crop.
- The sowing recommendations of the mix providers should not be undercut.
- Improved rooting and crumbling of the soil after catch crops mixes makes it easier to apply reduced soil tillage practices in comparison to pure catch crops.
- To promote soil life, it is preferable to roll or mulch the catch crop mix and mixed incubation instead of ploughing still standing green crops.

### FAKT - E1.2 Begrünungsmischungen im Acker-/Gartenbau

Bewilligte Fläche und Antragsteller nach Dienstbezirken der Landwirtschaftsverwaltung



## Additional sources of information

[www.landwirtschaft-bw.info/pb/site/pbs-bw-new/get/params\\_Dattachment/3866704/Ackerbauliche%20Ma%C3%9Fnahmen%20in%20FAKT.pdf](http://www.landwirtschaft-bw.info/pb/site/pbs-bw-new/get/params_Dattachment/3866704/Ackerbauliche%20Ma%C3%9Fnahmen%20in%20FAKT.pdf)

<http://ltz-bw.de/pb/,Lde/Startseite/Kulturpflanzen/Zwischenfruechte+und+Untersaaten>