

# 6. FORUM AGROFORSTSYSTEME

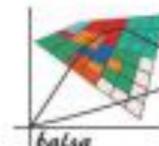
09.-10.  
Oktober 2018  
in Göttingen

## „BRÜCKEN BILDEN“

Agroforst als Bestandteil einer  
zukunftsgerichten und  
regional angepassten Landnutzung –  
Status quo, Bedarf und Perspektiven



GEORG-AUGUST-UNIVERSITÄT  
GÖTTINGEN



# Organisationsteam

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**Wiebke Bruns & Rike Göbel** *Anmeldung & Tagungsbüro*

**Studierende** *(Hanna Luka Schramm, Andrew Gall, Helena Römer)*



# Veranstalter & Organisationen



Zentrum für Biodiversität und Nachhaltige Landnutzung



Fachgruppe Waldökosystemforschung

Leitung: Prof. Dr. Ch. Ammer

Fakultät für Forstwissenschaften und Waldökologie



# Beispiel-Projekt



## SIGNAL

[view and/or download our Signal\\_Flyer](#)

### Sustainable intensification of agriculture through agroforestry

Central aim of our project is to evaluate whether and under which site conditions agroforestry in Germany can be a land use alternative that is ecologically, economically and socially more sustainable than conventional agriculture.

Central hypothesis: On marginal sites and sites with high potentials for leaching losses or soil erosion, innovative agroforestry systems are ecologically and economically more sustainable and socially more acceptable than conventional arable farming systems and, thus, improve the societal sustainability of modern agriculture.

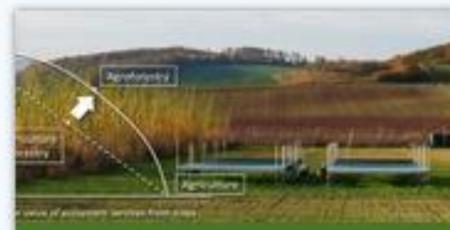
#### Was ist Agroforst?

Bäume und Sträucher werden zusammen mit Ackerkulturen oder Grünland auf einer Bewirtschaftungsfläche angebaut und genutzt.

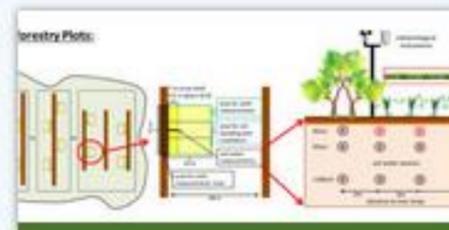
[more ...](#)

#### 6. Forum Agroforstsysteme vom 09.-10. Oktober 2018 in Göttingen

3. April 2018 | Das Forum steht unter dem Motto „Brücken bilden – Agroforst als Bestandteil einer zukunftsgerichteten und regional angepassten Landnutzung“. Wir laden Sie herzlich ein, mitzuwirken! Weitere



Central objective



Scientific background and current status of research



Detailed description of work plan of the project

[www.signal.uni-goettingen.de](http://www.signal.uni-goettingen.de)



- Zusammenschluss aus Wissenschaft, Beratung und Praxis, der sich mit der Nutzung und Erforschung von Agroforstsystemen in Deutschland beschäftigt
- Gegründet 2012 in Göttingen (derzeit 44 Mitglieder)
- Seit 2013 offizielle AG der Gesellschaft für Pflanzenbauwissenschaften e.V. (GWP)
- Also solche Mitglied im europäischen agroforstlichen Verbund European Agroforestry Federation (**EURAF**)

Derzeitige Leitung:

Rüdiger Graß, Grünlandwissenschaft und Nachwachsende Rohstoffe  
&  
Norbert Lamersdorf, Universität Göttingen



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## European Agroforestry Federation

### Who we are

The European Agroforestry Federation (EURAF) aims at promoting the use of trees on farms as well as any kind of silvopastoralism throughout the different environmental regions of Europe. EURAF has about 280 members from 20 different European countries.

### What we do

EURAF's aim to promote the adoption of agroforestry practices across Europe by:

- Any communication means, including **lobbying** for agroforestry adapted policies at the European scale.
- Organizing a **bi-annual conference**.
- Sending an electronic **newsletter** to all members.
- Managing a dedicated website, with functionalities to share information, scientific results and policy issues on agroforestry.
- Achieving specific agreements with national and international agroforestry societies or other related societies for the exchange of information and the organization of joint congresses, symposiums and seminars.
- Meeting monthly to delineate actions to target awareness of agroforestry systems mainly at policy level.
- Promoting events and participate in **research projects** providing networking throughout Europe.

### WHAT'S NEW

#### News and Events

For the first time in Europe: the World Congress on Agroforestry!

28 Sep 2018



Submit your abstract [here](#) by 31th October 2018 and come wow your colleagues next May!

#### News and Events

Agroforestry in Agroglobal

23 Sep 2018



Joana Amaral Paulo, delegate for Portugal of the EURAF offered an oral

#### News and Events

EURAF is getting bigger. Welcome Isle of Ireland

21 Sep 2018



# Beispiel-Projekt EURAF

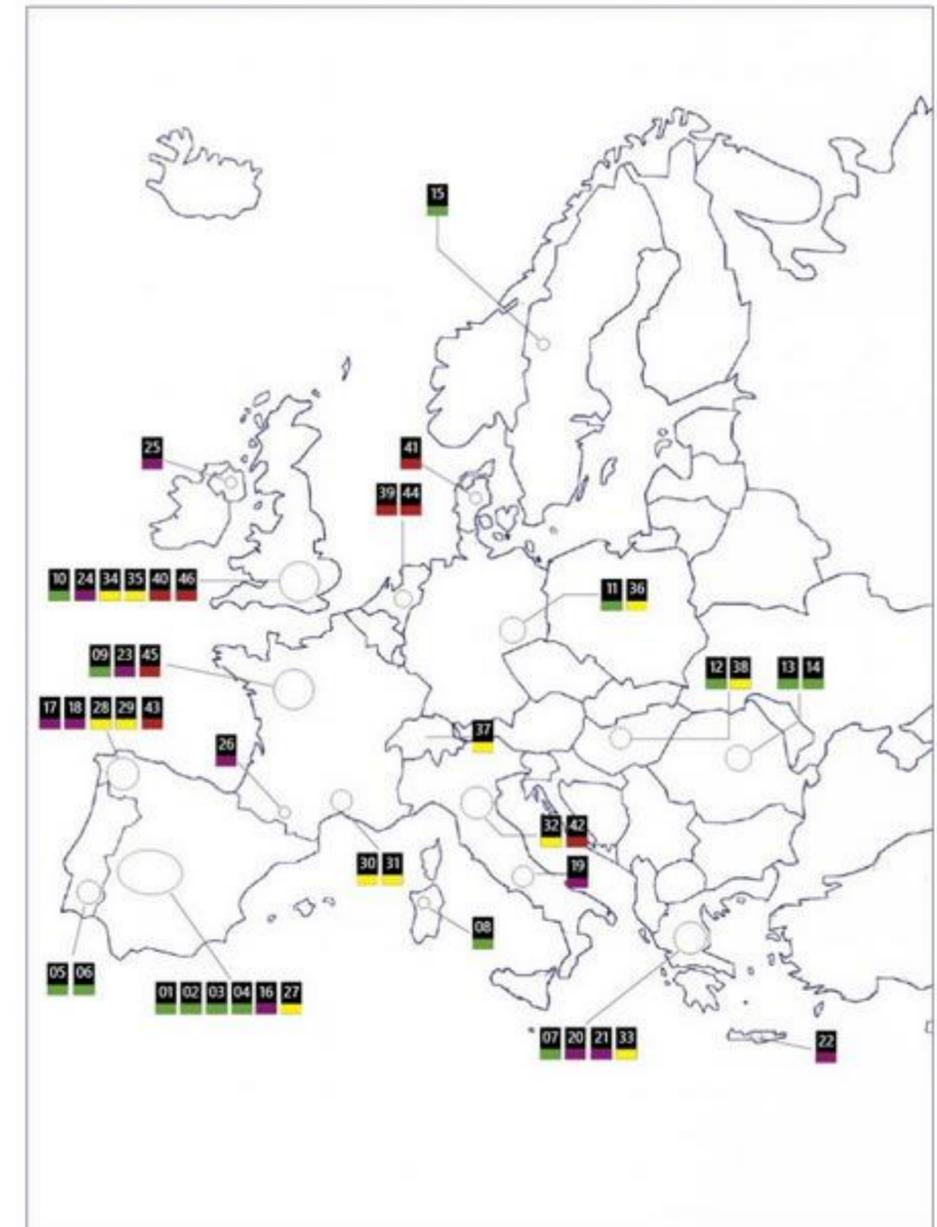


- Laufzeit: 2014 – 2017
- 17 europäische Länder, 2 internationale Organisationen
- 23 Universitäten, Forschungs- und Landwirtschaftsorganisationen
- 9 Arbeitspakete

# Beispiel-Ergebnis EU-Projekt AGFORWARD (1)

## (10) Best practice leaflets

<b>01</b> Agroforestry BEST PRACTICE  <b>Alley cropping systems: key objectives</b> <a href="http://www.agforward.eu">www.agforward.eu</a>	<b>02</b> Agroforestry BEST PRACTICE  <b>Analysing the site and choosing tree species</b> <a href="http://www.agforward.eu">www.agforward.eu</a>
<b>03</b> Agroforestry BEST PRACTICE  <b>Choosing quality planting material</b> <a href="http://www.agforward.eu">www.agforward.eu</a>	<b>04</b> Agroforestry BEST PRACTICE  <b>Planning an agroforestry project</b>
<b>05</b> Agroforestry BEST PRACTICE  <b>Protecting trees against wildlife damage: assessing the options</b>	<b>06</b> Agroforestry BEST PRACTICE  <b>Preparing the land</b> <a href="http://www.agforward.eu">www.agforward.eu</a>
<b>07</b> Agroforestry BEST PRACTICE  <b>Planting the trees</b> <a href="http://www.agforward.eu">www.agforward.eu</a>	<b>08</b> Agroforestry BEST PRACTICE  <b>Fitting tree protection to prevent deer damage</b>
<b>09</b> Agroforestry BEST PRACTICE  <b>Mulching for healthy tree seedlings</b> <a href="http://www.agforward.eu">www.agforward.eu</a>	<b>10</b> Agroforestry BEST PRACTICE  <b>Shaping the trees</b> <a href="http://www.agforward.eu">www.agforward.eu</a>



## Alley cropping systems: key objectives

[www.agforward.eu](http://www.agforward.eu)

In an alley cropping system, trees are multi-functional: the aim is to provide a range of ecosystem services alongside wood and fruits. These include shelter for crops, host beneficial organisms, increase soil fertility and carbon storage, mitigate climate change, and provide protection against soil erosion.

Alley cropping systems seek to increase the productivity and profitability of the farming system and help create resilient landscapes.

Developing alley cropping systems needs careful thought in terms of motivations and constraints for adoption and thinking carefully about the goals and information needed to achieve success.

Introducing trees into arable systems results in long term land use change (generally between 20-80 years). Care should be taken to ensure that the initial diagnostics and technical planning are appropriate to ensure success.



Planting the right tree at the right place



A planting density of 50-100 trees per hectare is often recommended when talking about timber trees (*Arbre et paysage* 32)

### How to combine trees and crops?

Alley cropping systems are a way of combining crop and tree production on the same plot, with both an economic and environmental objective. Generally they consist of:

- Tree rows (usually a mix of valuable hardwood species) established on cropland.
- Interstitial space between the trees is cropped with a range of species: cereals (for example, wheat, corn, barley), oilseed/protein crops (rapeseed, soya, faba beans, lupin, vetch, peas, sunflower), vegetables or vines.
- This type of system maintains the agricultural potential whilst generating new incomes, which makes it an appropriate option even on high-value agricultural lands.
- Tree rows are arranged in wide spaced parallel lines (28 to 40 m) in order to limit competition for light with agricultural crops and to allow mechanization of farm operations. Trees are established on grass strips of at least 2 m width, which allows cultivation up to 1 m from the trunk on both sides.
- With only 5 % of the area occupied by the rows (tree density changes from 50-250/ha initially to 30-50/ha in mature systems) the loss of crop productivity is low and the production of quality timber can provide substantial extra income over time.
- The large spacing between trees accelerates their radial growth. They develop larger crowns but, due to low density, they do not compete with each other (the average distance between two trees is 6 to 8 m).

**In order to produce high quality timber on an alley cropping system, it is necessary to 1) plant the right tree stock, 2) protect each tree from game, 3) mulch the trees and 4) carry out planned pruning operations.**

# Beispiel-Ergebnis EU-Projekt AGFORWARD (2)

(46)

## Innovation leaflets

**01 Agroforestry INNOVATION**

### Establishing pastures rich in legumes

How to develop a more sustainable dehesa farm  
[www.agforward.eu](http://www.agforward.eu)

**Why establish biodiverse pastures rich in legumes?**  
Dehesa is a man-made silvopastoral ecosystem. It is characterised by a high biodiversity, but pasture production can be low, especially in winter and summer. Consequently,

**What kind of seed mixture is the most appropriate?**  
The dehesa is a distinctive ecosystem characterized by a mosaic of shade imposed by scattered Quercus spp. trees and shaped by the moderate grazing pressure (+0.5 Livestock Unit/ha). The biggest challenge to establishing leguminous pastures is the spatial heterogeneity in terms of light, temperature and humidity.



View of pasture rich in legumes sown in November 2013 (picture taken in May 2014) in plots grazed by sheep at the dehesa farm in "Araguás", located in the National Park of Montaña de Rubia, Extremadura, Spain. *Dr. C. Navas*

**02 Agroforestry INNOVATION**

### Triticale in Iberian dehesas

Searching for shade-adapted forage crops  
[www.agforward.eu](http://www.agforward.eu)

**Why triticale?**  
Productivity of natural pastures in Iberian dehesas is usually low and very variable (on average 1440 kg dry matter (DM) t/ha/yr). They also provide low nutritive value forage, containing 4-20% legume fraction, 9-12% crude protein, 44-59% neutral

**Sowing and management**  
It is recommended that triticale sowing is carried out in late autumn, after the first autumn rainfall, following light tillage and using a seeding rate of around 200 kg/ha. Depending on the initial mineral soil levels, a N-P-K fertilization might be applied either before or during sowing (70 N kg/ha, 40 P<sub>2</sub>O<sub>5</sub> kg/ha and 70 K<sub>2</sub>O kg/ha).  
The recommended crop management is direct grazing by mid winter, to



Dehesa Eze Llanos in Sivola (Extremadura, Spain) cultivated with triticale to feed livestock. *Dr. C. Navas*

**03 Agroforestry INNOVATION**

### Fast rotational intensive grazing

A holistic management approach  
[www.agforward.eu](http://www.agforward.eu)

**Why holistic management?**  
The increased demand for meat is driven by a rising human population, and a dramatic growth in meat consumption per person. Farmers and scientists have sought to curb the adverse environmental impacts of livestock by in-

**How it works**  
The concept of Holistic Management emphasises that the sward not only provides nutrients to the ruminants, but also contributes to "feeding the soil" (Savory 2013). The basis for this approach is the grazing patterns of



Sheep grazing under an intensive fast rotation scheme in Mundo Nuevo farm (Campillo de Llerena, Extremadura, Spain). *Dr. María Ceballos*

**04 Agroforestry INNOVATION**

### Tree regeneration in grazed wood pastures

How to assist natural regeneration?  
[www.agforward.eu](http://www.agforward.eu)

**Why do we need to support tree regeneration?**  
Dehesas and Montados are very suitable for pasture production. However, livestock grazing hampers the natural regene-

**The constraints of current approaches to tree regeneration**  
The three most common techniques to enhance the tree regeneration of Iberian dehesas and montados are (i) planting young plants (1-2 years old) at high density (400-600 plants/ha) with complete exclusion of grazing for 20 years; (ii) planting and protecting a small number of young trees scattered in very open stands and maintaining grazing; and (iii) sim-



View of the young surviving trees a few years after an artificial plantation in an open dehesa stand. *Dr. M. Bertrán*

## Trees and the restoration of waterways in the Spreewald floodplain

Maintaining the benefits of historical land use  
[www.agforward.eu](http://www.agforward.eu)

### Why restore ancient waterways?

In the past, flood-prone lowlands in Germany were adapted for agricultural land use through the installation of small waterways to improve drainage. The excess sediment from the waterways was used to develop raised areas. Planting trees on these elevated areas resulted in the development of a small-scale mosaic agroforestry system, rich in biodiversity.

During the last 30 years, these historical waterways have become degraded, resulting in the return of flooding events and the occurrence of slack water. Slack water, unlike flood water, is alkaline and has very low oxygen levels. This can impede the vitality and growth of alder trees (*Alnus glutinosa*), the main tree species in the area. Consequently, tree growth and regeneration in the area have been inhibited.



Small-scale mosaic fragment retained in the Filow area in the Spreewald Biosphere Reserve.  
Ref: Tsoukova 2015

### Where and how to plant

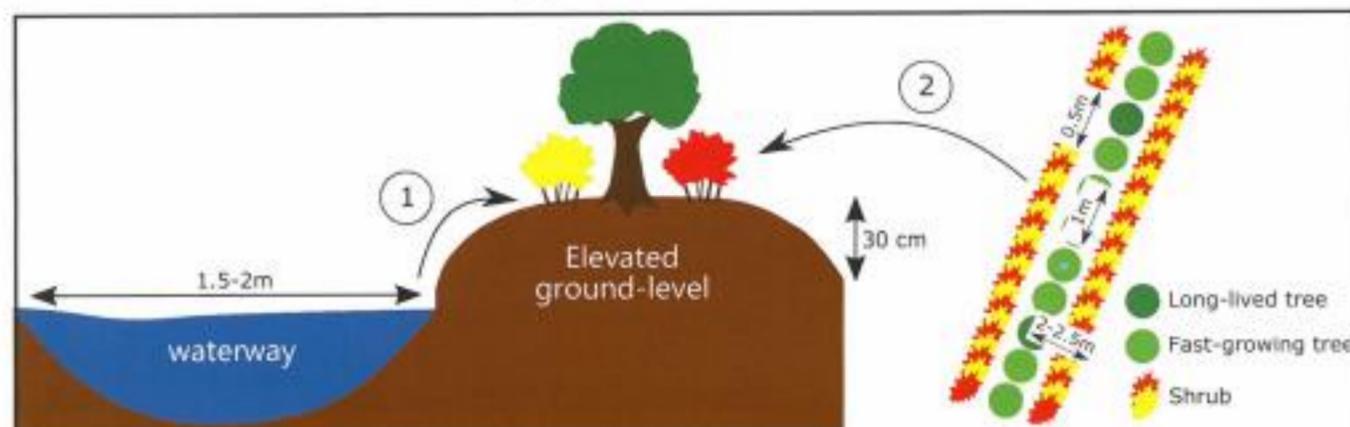
Trees should be established in the area exhibiting the highest degradation rates. Small waterways with widths of between 1.5 m and 2 m should be created by digging out the soil along the hedgerow. The excess soil material should be used to raise the ground level up to 30 cm. The new hedgerow should be established on this elevated area. The hedgerow should shade the waterway in order to reduce the growth of water plants. The hedgerow design is shown below.

The main tree species used should be black alder (*Alnus glutinosa*). Blackberry (*Rubus spp.*) is the main shrub species found in the research area. Both replanting and natural seed dispersal should be used as reestablishment methods. For the replanting, local material should be used and the regu-

lations for nature protected areas should be followed. A combination of long-lived and fast growing tree species, as well as shrubs, should be planted. Newly planted trees should be fenced during the first five years to ensure their protection from livestock and game.



Neglected waterways in the Filow area. Ref: Mirok 2016



A waterway is created by digging out the soil and using it to raise the ground-level (1), where a new hedgerow is planted (2).

## TAGUNGSPROGRAMM (1. Tag, 09.10.2018)

ab 08:30	Anmeldung
09:00–09:15	Eröffnung, Grußwort
09:15–09:45	Gehölze in der Agrarlandschaft – von der Rodung bis zur Integration als Element einer differenzierten Landnutzung (W. Haber, München)
09:45–10:15	Chancen von Agroforstwirtschaft für die ländliche Entwicklung (T. Plieninger, GAU Göttingen/ Univ. Kassel)
10:15–10:45	Bestehende und wünschenswerte rechtliche Regelungen für eine bessere Umsetzung von Agroforstsystemen in Deutschland (W. Zehlius-Eckert, TU München)
10:45–11:15	<b>KAFFEPAUSE</b>
11:15–11:45	Praxis trifft Wissenschaft: Anbauerfahrungen und Ergebnisse aus dem Projekt AUFWERTEN (T. Domin, Hof Domin, Senftenberg; C. Böhm, BTU Cottbus)

11:45–12:15	Praxis trifft auf Planung: Potenzialermittlung von Agroforstflächen – Szenarientwicklung und Entscheidungsunterstützung auf lokaler bis regionaler Ebene (G. Busch, Balsa, Göttingen)
12:15–12:45	Diskussion und Zusammenfassung
12:45–13:45	<b>MITTAGSPAUSE mit Posterausstellung</b>
13:45–15:45	<b>Kurzvorträge</b> (10-15 Min. + 5 Min. Diskussion) <b>zu den Themenbereichen:</b> <ul style="list-style-type: none"><li>- Landschaft beanspruchen, gestalten und schützen</li><li>- Best Practice Beispiele von Agroforstsystemen in Deutschland und Europa</li><li>- Hemmnisse und Lösungsansätze bei der Umsetzung von Agroforst</li></ul>
15:45–16:15	<b>KAFFEPAUSE</b>
16:15–17:30	<b>Posterausstellung (moderiert)</b>
ab 19:30	<b>ABENDVERANSTALTUNG mit Buffet in der Alten Mensa</b>