FOSTERING SUSTAINABLE FEEDSTOCK PRODUCTION FOR ADVANCED BIOFUELS ON UNDERUTILISED LAND IN EUROPE

REPORT ON INFO DAYS IN THE TARGET COUNTRIES (ITLAY, UKRAINE, GERMANY)

05.06.2018

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Project acronym	FORBIO
H2020 Call topic	LCE-14-2014 - Market uptake of existing and emerging sustainable bioenergy
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1. Objectives

The main objective of the information days in the target regions is to put together landowners, farmers, local actors and biomass supply chain stakeholders with the aim of encouraging them to initiate the setting up of sustainable local bioenergy supply chains on underutilised land. This shall be done by presenting the project results mainly the agronomic and techno-economic feasibility of the case study done in the region pointing out that such projects are economically feasible and by presenting the results of the sustainability assessment which shows that the process is sustainable.

The second info days which are organised in other regions act as a replication tool aiming at informing other stakeholders about the opportunity of building sustainable bioenergy supply chains on underutilised land thus increasing the project impacts. The same concept is applied for these events.

2. Info days in Italy

2.1. Info day in the target region

2.1.1. Introduction

The first info-day in Italy, organized in the Italian language, was a two-day information event organised by CREA for the local stakeholders, implemented on 13th and 14th October 2016 in Carbonia, Sardinia (Province of Cagliari). The event took place on the Congress Hall at Hotel Lu', alongside the internal project meeting (12th October). The title of the event was "Progetto FORBIO: Promuovere la produzione sostenibile di materie prime per biocarburanti avanzati in terreni sotto utilizzati in Europa". The event was translated into English on the first day, while in the second day the translation was available during the field trip in the afternoon.

The main aims of the information day were to provide detailed information of the project results such as agronomic feasibility, sustainability issues, and advantages for farmers, landowners, local actors and stakeholders for producing biomass feedstock on contaminated and marginal lands. Remarkably, the presentation of the experiences and results from the contaminated land "Terra dei Fuochi" (Prof. Fagnano) serves as a basis for sharing experiences and feasible solutions with a similar study area in Italy, to encourage farmers and investors toward sustainable local supply chains. Moreover, the field trip allowed observing in detail the study area, some contaminated sites and the industrial district of Portovesme, as well as the experimental plots with Arundo donax.

The presentations were given by five speakers from CREA, FAO, WIP, University of Naples, on 13th, and six speakers from Sardegna Ricerche, CNR, University of Sassari and Agris on 14th. The information day was attended by 75 participants, representative of farmers, agronomists and agriculture professional organization, researchers, oil and gas company (SHELL), representatives of local municipalities, regional agencies, and local investors.

2.1.2. Invitation

FORBIO project – project meeting

October 12-14, 2016, Carbonia – Italy

Venue: Hotel Lu'

Meeting Agenda

Wednesday, October 12, 2016	
Morning	Arrival and registration
14:00 to 20:00	Internal project meeting – FORBIO consortium members only

Thursday, October 13, 2016	
9:00 to 11:00	Open meeting - Keynote addresses – High level European and National Authorities Representative of the Ministry of Environment (tbc) Representative of the Ministry of Agriculture (tbc) Regional authorities FAO/GBEP presentation on bioenergies (Michela Morese, FAO) Opening presentation by the FORBIO coordinator (Rainer Jansen, WIP) Presentations from local stakeholders (environmental agency, irrigation consortia)
11:00 to 11:30	Break
11:30 to 13:30	Presentation of the Italian case study (Guido Bonati - Giuseppe Pulighe, CREA) Contaminated / marginal areas: the Italian experience with Terra dei Fuochi (Massimo Fagnano, University of Napoli) Agroenergy crops and the Common Agricultural Policy (Valentina Carta, CREA)
13:30 to 15:00	Lunch
15:00 to 18:00	**Panel discussion with local stakeholders on barriers and needs to the development of sustainable bioenergy value chains**
15:00 to 16:00	Environmental barriers and needs Moderator: FAO (tbc) Panelists: Min Agricoltura, Min Ambiente, Assessorato Agricoltura (Sardegna/municipalities), Assessorato Ambiente (Sardegna/municipalities), ARPAS, UNISS, Consorzio Bonifica, Legambienta, WWF, ICCT, etc Discussions will address the following possible concerns:

	• Air quality (pollutants and GHG considerations) • Soil quality (soil pollutants, soil properties, etc.) • Water quality (leaching of chemicals, both pollutants and contaminants, fertilizers and pesticides, into aquifers, ground and surface waters) • Water availability/stress (irrigation facilities, needs, stresses and competition) • Species Invasiveness and biodiversity (bioenergy feedstocks' invasiveness and control measures, biodiversity status and perspectives in the study area, etc.) • Landscape (restrictions and limitations to changes of original patterns)
16:00 to 16:45	Social barriers and needs Moderator: FAO (tbc) Panelists: Assessorato Igiene e Sanita'(Sardegna/municipalities), Assessorato Lavoro (Sardegna/municipalities), Italia Nostra, other NGOs, Discussions will address the following possible concerns: • Land tenure (land ownership in the study area: is land owned by the farmers, municipalities, region, etc.) • Employment in agriculture (what is the average age of farmers, etc.) • Income generation • Health conditions and implications; health safety • Novelty acceptance and stakeholder's buy-in and ownership, confidence level (new value chains)
16:45 to 17:00	Break
17:00 to 18:00	Economic and technical barriers and needs Moderator: FAO (tbc) Panelists: Min Agriculture, Assessorato Agricoltura (Sardegna/municipalities), Assessorato Industria, ARGEA, Coldiretti, CIA, Confagricoltura, GSE, CNR, etc. Discussions will address the following possible concerns: • Profitability (market conditions for biomass production, avg costs & revenue analyses, etc.) • Access to credit (loans, microloans, equity, other forms of financing for this kind of value chains) • Incentives (tax breaks, tariffs, etc.) • Capacity development (human and institutional) • Agronomic needs (materials, inputs, techniques, equipment, training)

Venerdì 14 Ottobre 2016

9:00 - 11:00	**Presentazione di progetti di ricerca sulle biomasse energetiche in ambiente mediterraneo: esperienze locali e nazionali** Dichiarazioni di apertura e presentazioni • Asquer C. – (Sardegna Ricerche) – *"Analisi di contesto e potenziale energetico delle colture da biomassa"* • Sulas L. – (CNR ISPAAM) – *"Specie da bioenergia per ambienti mediterranei"* • Ledda L. – (Uniss) – *"Coltivazione di colza e carinata in Sardegna: problematiche e prospettive"* • Arca P. – (Uniss) – *"Sistemi colturali per la produzione di biomassa: sperimentazioni in corso nel Sulcis con Arundo donax"* • Virdis A. – (Agris) – *"Colture erbacee per le bioenergie. Esperienze nel Sud Sardegna"* • Carboni G. – (Agris) – *"Potenzialità delle Brassicaceae per la produzione di oli vegetali nel sud Sardegna"*
11:00 - 11:30	Pausa
11:30 - 13:30	Presentazioni
13:30 - 15:00	Pranzo
15:00 - 18:00	Visita in campo nell'area di studio

FORBIO | Re: Seminari...

Rispondi | Rispondi a tutti | Inoltra | Sposta a | Elimina | Spam | Altre azioni | 9/12

Visualizza i messaggi | Nessun filtro

Da/A	Oggetto	Data	Dimensioni
Valeriia Kovach	Re: New FORBIO Colleague at WIP: Rita Mergner - Gree...	29 lug 2016 - 13:25	25 Kb
Fabiola Fagnani	Seminario FORBIO 13-14 ottobre 2016	29 lug 2016 - 12:50	73 Kb

da Fabiola Fagnani <fabiola.fagnani@crea.gov.it>
data venerdì 29 luglio 2016 - 12:50
A: <lgallus@comune.carbonia.ca.it>
cc <guido.bonati@crea.gov.it> , Giuseppe Pulighe <giuseppe.pulighe@crea.gov.it>
oggetto Seminario FORBIO 13-14 ottobre 2016
sensibilità normale
priorità normale

Gentile dr. Gallus,
sono una collaboratrice del CREA-PB (Centro di Politiche e Bioeconomia) di Roma.
Le scrivo a proposito del progetto FORBIO. Si tratta di un progetto di ricerca Horizon 2020, finanziato dall'UE, per il quale curo l'organizzazione del seminario di presentazione dei risultati sull'area test in Sardegna meridionale.

FORBIO (http://www.forbio-project.eu/) ha come obiettivo lo studio della produzione di biomasse agricole e forestali in suoli agricoli abbandonati oppure in aree contaminate; dimostrerà pertanto la fattibilità di utilizzare terreni negli Stati Membri per la produzione sostenibile di materia prima per le bioenergie senza impattare con la produzione di cibo e foraggio, nè interferire con i terreni attualmente utilizzati per scopi ricreativi e/o di conservazione.

Nei giorni 13-14 ottobre p.v. prevediamo di organizzare un seminario di presentazione della prima fase di progetto, in particolare riferita a uno studio di fattibilità per l'utilizzo di colture energetiche in aree marginali o contaminate.
Nel corso del seminario prevediamo di:
- coinvolgere gli stakeholder a livello locale;
- integrare le conoscenze della comunità scientifica che opera nel settore delle energie, a livello regionale nazionale e internazionale;
- visitare l'area test di interesse del progetto.

Per la riuscita dell'iniziativa, riteniamo importante la sua partecipazione. Il dr. Bonati, che coordina il progetto, la contatterà nel corso dei prossimi giorni per illustrarle in modo più esaustivo quello che pensiamo di ottenere come risultato di questo incontro e per quale motivo e su quali aspetti riteniamo importante la sua presenza.

Siamo ovviamente a disposizione per ulteriori informazioni. Può trovare direttamente qui sotto le nostre coordinate.

Cordiali saluti,

Fabiola Fagnani

sito web di progetto
http://www.forbio-project.eu/project-in-general

2.1.3. Agenda

Info day in Carbonia, 13 October 2016		
Time	**Title of presentation**	**Speaker**
9:00 - 9:30	***Registration***	
9:30 – 11:00	Open meeting - Keynote addresses – High level European and National Authorities Representative of the Ministry of Environment Representative of the Ministry of Agriculture Regional authorities	
	FAO/GBEP presentation on bioenergies	Michela Morese - FAO
	Opening presentation by the FORBIO coordinator	Rainer Jansen - WIP
11:00 – 11:30	***Coffee break***	
11:30 – 13:00	Presentation of the Italian case study	Guido Bonati, Giuseppe Pulighe - CREA
	Contaminated / marginal areas: the Italian experience with Terra dei Fuochi	Massimo Fagnano - University of Napoli
	Agroenergy crops and the Common Agricultural Policy	Valentina Carta, Roberta Ciaravino, CREA

13:30 – 15:00	***Lunch***
15:00 – 18:00	**Panel discussion with local stakeholders on barriers and needs to the development of sustainable bioenergy value chains** Panelists: Min Agricoltura, Min Ambiente, Assessorato Agricoltura (Sardegna/municipalities), Assessorato Ambiente (Sardegna/municipalities), ARPAS, Argea, UNISS, Consorzio Bonifica, Legambienta, WWF, Coldiretti, CIA, ICCT
	• Environmental barriers and needs • Social barriers and needs • Economic and technical barriers and needs

Info day in Carbonia, 14 October 2016		
Time	**Title of presentation**	**Speaker**
9:00 - 9:30	***Registration***	
9:30 – 10:00	Analisi di contesto e potenziale energetico delle colture da biomassa	Asquer C. - Sardegna Ricerche
10:00 – 10:30	Specie da bioenergie per ambienti mediterranei	Sulas L. - CNR
10:30: - 11:00	Coltivazione di colza e carinata in Sardegna: problematiche e prospettive	Ledda L. - University of Sassari
11:00 – 11:30	Coffe break	
11:30 – 12:00	Sistemi colturali per la produzione di biomassa: sperimentazioni in corso nel Sulcis con Arundo donax	Arca P. - University of Sassari
12:00 – 12:30	Colture erbacee per le bioenergie. Esperienze nel Sud Sardegna	Virdis A. - Agris
12:30 – 13:00	Potenzialità delle brassicaceae per la produzione di oli vegetali nel Sud Sardegna	Carboni G. - Agris
13:30 – 15:00	***Lunch***	
15:00 – 18:00	***Field trip***	

2.1.4. Summary of presentations

The Info Day was opened by **Rainer Jansen** from WIP who presented the FORBIO project on Horizon 2020 programme "Fostering sustainable feedstock production for advanced biofuels on underutilized land in Europe", its goals and activities in the countries of the project consortium.

Michela Morese from FAO made presentation regarding the activities of GBEP secretariat and the work on sustainability indicators for bioenergy production and market for sustainable development.

Guido Bonati from CREA presented a description of the study area in Sardinia and the rationale for contaminated and marginal lands, the first results regarding the agronomic feasibility study, the GIS-based approach for identification of the underutilized lands and identified suitable energy crops for cultivation for producing advanced biofuels.

Massimo Fagnano from the University of Naples told about the experience of the cultivation of bioenergy crops on contaminated and marginal land with Terra dei Fuochi in Campania region. This study region is particularly interesting because it has some common characteristics with the Italian case study in Sardinia.

Valentina Carta and **Roberta Ciaravino** from CREA reported on the main possibilities and financial instruments regarding agroenergy crops and the Common Agricultural Policy, in particular Italian policy regulations and Rural Development Programme in Sardinia.

The presentations of the 14th were held by local researchers and were related to technical and agronomic studies that are all included in the agronomic feasibility study (Deliverable D2.1). The purpose of these reports is to provide farmers and participants with complete background information on the potentials of a portfolio of bioenergy crops suitable for the Mediterranean environment.

The presentation of **Carla Asquer** from Sardegna Ricerche reported on "Context analysis and energy potential of biomass crops"; **Leonardo Sulas** from CNR reported on "Bioenergy species for Mediterranean Environment"; **Luigi Ledda** from University of Sassari provides and overview on "Cultivation of rapeseed and carinata in Sardinia: problems and prospects"; Pasquale Arca from University of Sassary told about " Cultivation systems for biomass production: ongoing experiments in Sulcis with Arundo donax"; **Adriana Virdis** from Agris reported on " Herbaceous crops for bioenergy. Experiences in South Sardinia"; **Gianluca Carboni** from Agris told about "Potential of brassicaceae for the production of vegetable oils in South Sardinia".

2.1.5. Conclusions

At the end of the presentations of 13th in the morning, a discussion was held in the afternoon, where the audience asked the speakers about the environmental, social and economic barriers and needs, as well as practical issues for bioenergy crops cultivation in Sardinia. A number of issues were identified, in particular by representatives of the Land Reclamation and Irrigation Consortia who reported that the area near Carbonia is not equipped for irrigation, while in the municipalities of Tratalias, Masainas and San Giovanni Suergiu the area is equipped but drought and water shortages in some years is a limiting factor. In general, they said that if the cultivation of bioenergy crops is well remunerated, farmers can participate and are interested in the value chain. On the other hand, other participants affirmed that the cultivation of energy crops is risky and unprofitable (return of investment) compared to horticulture. The discussion revealed also some concerns related to the invasivity of some bioenergy species (i.e. Arundo donax), issues related to the transport at the industrial plant, and concerns related to the integration (monetary incentives, financial schemes) in Rural Development Programme in Sardinia.

2.2. Info day in another Region

2.2.1. Introduction

The second information day of FORBIO project in Italy, conducted in Italian language, was held on June 20, 2018 in Rome in order to ensure a replication and dissemination of the project concept and results in other regions. The event was organized at CREA – Research Centre for Engineering and Agro-food Processing, Via Carlo Giuseppe Bertero, 22. Venue of the event was the Conference of the Italian Society of Agrometeorology http://www.agrometeorologia.it/joomla/it/news/276-first-call-2018.html). During the poster session of the Conference, the poster prepared in collaboration with FAO and University of Florence was exposed in the foyer and published on the website of the FORBIO project. The title of the information day was: "Promuovere la produzione sostenibile di materie prime per biocarburanti avanzati in terreni sotto utilizzati in Europa". The main aims of the information day were to provide the target audience detailed information on the project, main results such as agronomic and economic feasibility, sustainability issues, and more in general the opportunities and potentials for farmers, investors, and landowners for producing biomass feedstock for advanced biofuels on contaminated and marginal lands in Italy. The target audience included research institutes, governmental institutions, farmers, participants of the Congress referred above, agronomist, as well as business and bioenergy association. The presentations were held by six speakers from CREA, FAO, Chimica Verde, Italian Ministry of Agriculture, and the number of participants amounted 20 persons.

2.2.1. Invitation

FORBIO Promuovere la produzione sostenibile di materie prime per biocarburanti avanzati in terreni sotto utilizzati in Europa

WWW.FORBIO-PROJECT.EU

L'uso delle **biomasse** a fini energetici è una parte importante del mix energetico da fonti rinnovabili nell'Unione Europea (UE), e si prevede che nei prossimi anni possa crescerà in maniera significativa sospinto dalla revisione della Direttiva sulle **energie rinnovabili** (RED II). In questo senso, i terreni sottoutilizzati (marginali, contaminati o abbandonati) nelle regioni mediterranee hanno un grande potenziale per raggiungere gli obiettivi dell'UE con una produzione di materie prime sostenibili, ma anche per dare nuove opportunità di lavoro e crescita economica. Il progetto H2020 **FORBIO** (www.forbio-project.eu) ha applicato nell'area di studio del Sulcis una serie di approcci innovativi al fine di sviluppare piani di azione per la rimozione degli ostacoli economici e non economici alla diffusione di **bioenergie sostenibili** e per promuovere e facilitare la formazione di partenariati tra agricoltori, produttori di bioenergia e istituzioni locali. Lo scopo dell'incontro è quello di sensibilizzazione e promuovere i principali risultati del progetto al fine di costituire le basi per la creazione e il rafforzamento di una catena di valore bioenergetica locale competitiva e che soddisfi i più elevati criteri di sostenibilità, al fine di contribuire alla diffusione sul mercato delle bioenergie sostenibili nell'UE, nelle regioni mediterranee e in Sardegna.

Gli obbiettivi specifici dell'incontro **info day** sono:

- Fornire informazioni sul progetto e sulle potenzialità agronomiche, tecnico-economiche e di sostenibilità per la coltivazione di colture dedicate per la produzione di bioenergie;
- Fornire informazioni sulle opportunità e prospettive di filiere bioenergetiche in aree sottoutilizzate (contaminate, abbandonate, marginali);
- Proporre raccomandazioni e soluzioni fattibili e trasferibili per incoraggiare gli agricoltori, investitori e attori locali verso filiere locali sostenibili e integrate nel territorio.

SEMINARIO INFORMATIVO
CREA - Centro di ricerca Difesa e Certificazione
Roma
20 giugno 2018

PROGRAMMA

09.30 - 9.50	**Registrazione dei partecipanti**
09.50 - 10.00	**Saluti e apertura lavori** Roberto Henke - CREA
10.00 - 10.30	**Il progetto FORBIO** Guido Bonati, Giuseppe Pulighe - CREA
10.30 - 11.00	**Strategie nazionali e comunitarie per le agroenergie** Stefano Fabiani - CREA - Attilio Tonolo - MiPAAF
11.00 - 11.30	**Indicatori di sostenibilità per le filiere bioenergetiche** Michela Morese - FAO
11.30 - 12.00	**Biomasse, chimica verde e sostenibilità** Sofia Mannelli - Chimica verde
12.00 - 12.30	**Sostenibilità economica di un modello di microfiliera bioenergetica di autoconsumo (Progetto AGROENER)** Giulio Sperandio - CREA
12.30 - 13.00	**Dibattito e chiusura lavori**

FILIERA
Fornitura sostenibile di biomassa per biocarburanti avanzati

Questo progetto ha ricevuto fondi dal programma di ricerca ed innovazione dell'Unione Europea Orizzonte 2020 [Contratto N° 691846].

FORBIO Promuovere la produzione sostenibile di materie prime per biocarburanti avanzati in terreni sotto utilizzati in Europa

WWW.FORBIO-PROJECT.EU

SEGRETERIA ORGANIZZATIVA
CREA - Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria
Centro di ricerca Politiche e Bioeconomia - Via Po, 14 00198 Roma
Guido Bonati - Giuseppe Pulighe
Telefono: 06 47856280
e-mail: guido.bonati@crea.gov.it - giuseppe.pulighe@crea.gov.it

CON IL PATROCINIO DI:

ORDINE DEI DOTTORI AGRONOMI E DOTTORI FORESTALI DELLA PROVINCIA DI ROMA

PROGETTO AGROENER
agroener.crea.gov.it

COME RAGGIUNGERE LA SEDE DEL SEMINARIO:
CREA - Centro di ricerca Difesa e Certificazione
Via Carlo Giuseppe Bertero, 22 – 00156 Roma

***Metropolitana**: con la Metropolitana Linea B fino alla fermata di Ponte Mammolo, prendere dal capolinea l'autobus n. 341 e scendere alla fermata di Via Galbani.*
***In auto**: Dal Grande Raccordo Anulare (GRA) uscire a via Nomentana (uscita n.11) verso il centro città (10,2 km); girare a sinistra per viale Kant. Alla prima uscita a destra prendere per via Giovanni Zanardini, percorrerla sino all'incrocio con via Michelangelo Tilli. Su via Michelangelo Tilli girare a sinistra alla seconda traversa (via Pietro Bubani); alla fine di via Pietro Bubani (circa 100 m) prendere a destra su via Carlo Giuseppe Bertero.*

Questo progetto ha ricevuto fondi dal programma di ricerca ed innovazione dell'Unione Europea Orizzonte 2020 [Contratto N° 691846].

2.2.2. Agenda

Time	Title of presentation	Speaker
9:30 – 9:50	**Registration**	
9:50 – 10:00	Welcome message and opening remarks	Roberto Henke - CREA
10:00 – 10:30	The FORBIO project	Guido Bonati, Giuseppe Pulighe - CREA
10:30 – 11:00	National and Community strategies for agro-energy	Stefano Fabiani - CREA; Attilio Tonolo - Mipaaf
11:00 – 11:30	Sustainability indicators for bioenergy value chains	Michela Morese, (FAO)
11:30 – 12:00	Biomass, green chemistry and sustainability	Sofia Mannelli - Chimica Verde
12:00 – 12:30	Economic sustainability of a model of a self-sufficiency bio-energy micro supply chain (AGROENER Project)	Giulio Sperandio - CREA
12:30 – 13:00	**Final remarks and closure**	

2.2.3. Summary of presentations

The Information Day was opened by **Guido Bonati** from CREA who presented the FORBIO project on Horizon 2020 programme "Promuovere la produzione sostenibile di materie prime per biocarburanti avanzati in terreni sotto utilizzati in Europa", its goals and activities, the project consortium and study areas, as well as details and rationale on the study area in Sardinia.

Giuseppe Pulighe from CREA presented a description of the study area in Sardinia with a focus on the results regarding the agronomic and techno-economic feasibility study. Economic estimation (based on Arundo donax) showed that final cost at a plant gate will be 71 €/Mg dry ton of biomass/year, collected in a radius of 40 km. The GIS-based approach for the identification of the underutilized lands showed that about 1000 hectares are available in the most contaminated area. Key remarks highlight that Arundo donax and Cardueae crops are the most suitable energy crops in the Mediterranean environments for producing advanced biofuels.

Stefano Fabiani from CREA and **Attilio Tonolo** from the Italian Ministry of Agriculture reported on the framework of Italian strategies for bioenergy and target at 2020, with a view on the National Action Plan (PAN) and National Energy Strategy

(SEN) in the energy sector. In addition, they also presented the state of the art on legislation, new energy targets for renewable energies for 2030 in Italy, and finally support schemes for renewable energy.

Michela Morese from FAO made presentation regarding the activities of GBEP secretariat and the work on sustainability indicators for bioenergy production and market in the FORBIO project, and recent developments on sustainability of forest biomass for energy and ethanol from maize and sugarcane in Paraguay, and sustainability of biogas sector in Vietnam.

Sofia Mannelli from Chimica Verde told about biomass production, green chemistry on underutilized land, and potentials for newly integrated biorefineries in the framework of bioeconomy. In particular, she speaks about the opportunities for the agricultural sector in Italy, fostering the multipurpose of biomass crops for producing bio-energy, bioplastics, bio-lubricants, bio-products, bio cosmetics, and others.

Giulio Sperandio from CREA reported on the experiences of the project AGROENER (founded by the Italian Ministry of Agriculture) on the economic sustainability of a model for a self-sufficiency bio-energy micro supply chain using short rotation forestry and medium rotation forestry using poplar and eucalyptus trees.

2.2.4. Conclusions

At the end of the presentations a discussion was held, recalling the main results obtained in the Italian case study, main outcomes and barriers detected in the implementation of a bioenergy value chain. All participants agreed that one of the main obstacles for the sector is the lack of adequate support policies and financial schemes from the Italian government concerning the bioenergy sector. Some participants pointed out that the Italian Ministry of Agriculture is often absent or poorly involved in strategic decisions for long-term decisions regarding the agro-energy sector. In addition, it has been pointed out that there is no clear definition of marginal land by law. This can be an obstacle for the correct landscape planning.

3. Info day in Ukraine

3.1. Info day in the target region

3.1.1. Introduction

FORBIO Information Day **"Use of underutilized lands for sustainable bioenergy feedstock production – additional income to farmers"** was held on December 12, 2017 in Kyiv for the Target region of Kyiv oblast (includes Ivankiv region). The **venue** of the event was Great Conference Hall of the National Academy of Sciences of Ukraine, located in the city center on Volodymyrska str., 55, Section Hall, 2-nd floor.

Main goals of the Info day were to inform the target audience about the FORBIO project and results of the Agronomic Feasibility and Techno-Economic Feasibility of willow plantations for energy production in Ukraine as it was the example of Ukrainian case study site of the project.

Invited **Target audience** included agrarian companies, farmers, municipalities, business companies, but also research institutes, consulting companies, public organisations, governmental institutions and media that attended the Info day (see Fig.1).

The number of **participants** amounted **72 persons**, although all the **96 persons that registered** received the Info day materials afterwards.

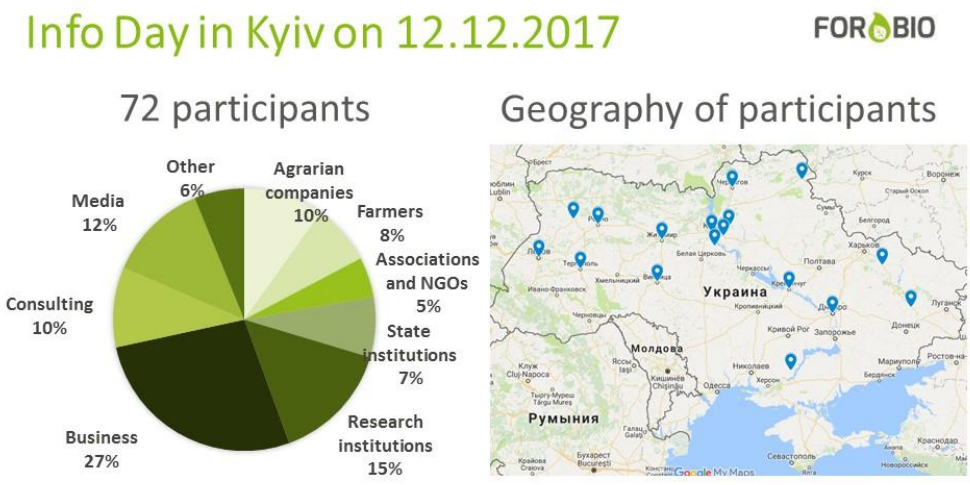
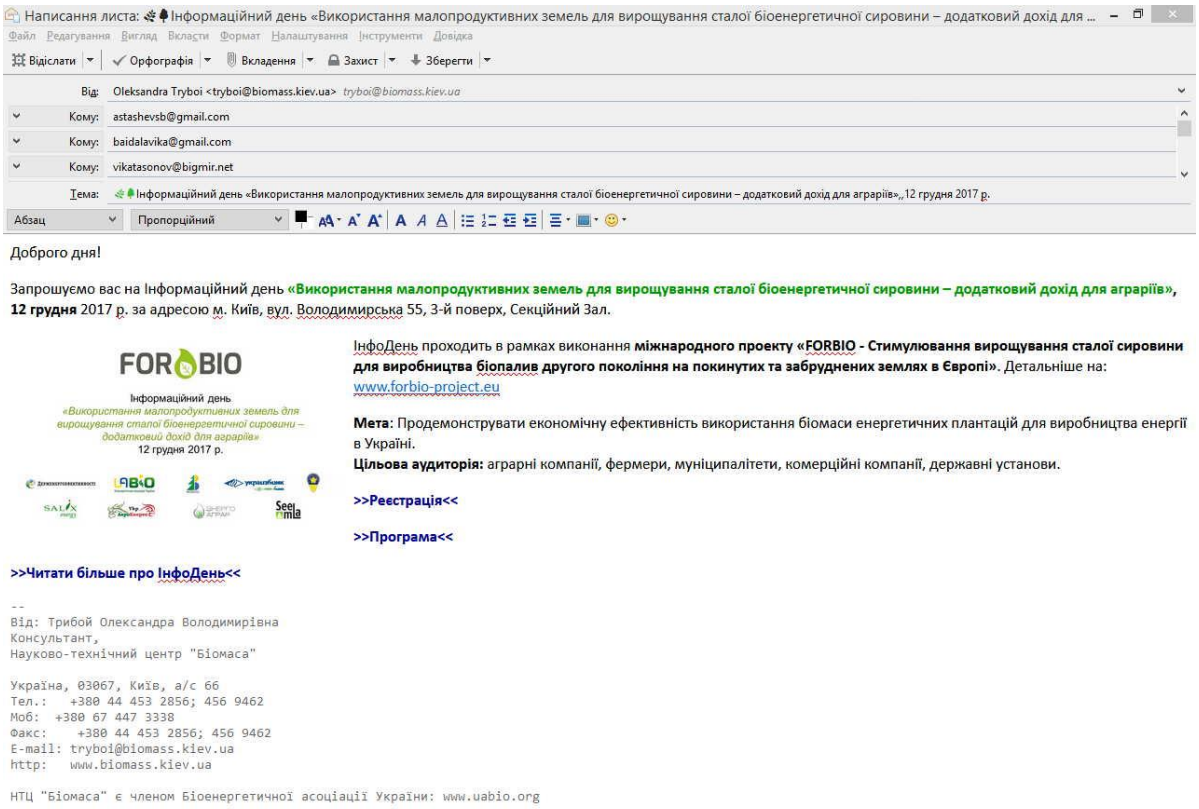


Fig. 1 Number and geography of participant of the Info Day in Kyiv on December 12, 2018.

3.1.2. Invitation



Написання листа: Інформаційний день «Використання малопродуктивних земель для вирощування сталої біоенергетичної сировини – додатковий дохід для ...

Файл Редагування Вигляд Вкладки Формат Налаштування Інструменти Довідка

Відіслати | Орфографія | Вкладення | Захист | Зберегти

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Тема: Інформаційний день «Використання малопродуктивних земель для вирощування сталої біоенергетичної сировини – додатковий дохід для аграріїв»„12 грудня 2017 р.

Абзац | Пропорційний

Доброго дня!

Запрошуємо вас на Інформаційний день **«Використання малопродуктивних земель для вирощування сталої біоенергетичної сировини – додатковий дохід для аграріїв»**, **12 грудня** 2017 р. за адресою м. Київ, вул. Володимирська 55, 3-й поверх, Секційний Зал.

FORBIO

Інформаційний день

«Використання малопродуктивних земель для вирощування сталої біоенергетичної сировини – додатковий дохід для аграріїв»

12 грудня 2017 р.

ІнфоДень проходить в рамках виконання **міжнародного проекту «FORBIO - Стимулювання вирощування сталої сировини для виробництва біопалив другого покоління на покинутих та забруднених землях в Європі»**. Детальніше на: www.forbio-project.eu

Мета: Продемонструвати економічну ефективність використання біомаси енергетичних плантацій для виробництва енергії в Україні.

Цільова аудиторія: аграрні компанії, фермери, муніципалітети, комерційні компанії, державні установи.

>>Реєстрація<<

>>Програма<<

>>Читати більше про ІнфоДень<<

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НТЦ "Біомаса" є членом Біоенергетичної асоціації України: www.uabio.org

3.1.3. Agenda

Time	Title of presentation	Speaker
9:00 - 9:30	***Registration. Morning coffee***	
9:30 – 9:50	State support to bioenergy development	Sergii Savchuk, Head of State Agency of Energy Efficiency and Energy Saving of Ukraine
9:50 – 10:10	Prospects for creation of biofuels market in Ukraine	Georgii Geletukha, Head of the Board of Bioenergy Association of Ukraine
10:10 – 10:30	Fostering sustainable feedstock production for advanced biofuels on underutilized land in Europe. FORBIO project of Horizon 2020	Tetiana Zheliezna, SEC “Biomass”
10:30 – 10:50	Financing of biomass ecological projects by UkrGasBank	Alex Savin, JSB “UkrGasBank”

10:50 – 11:10	Prospects of biomass crops use for energy production in Ukraine	Volodymyr Kramar, SEC “Biomass”
11:10 – 11:40	***Coffee break***	
11:40 – 12:00	Results of Agronomic and Techno-economic feasibility of growing energy crops. FORBIO project of Horizon 2020	Oleksandra Tryboi, SEC “Biomass”
12:00 – 12:20	Continuous cultivation of biomass in marginal lands in Europe" SEEMLA project EU program Horizon 2020	Oleksandr Ganzhenko, Institute of Bioenergy Crops and Sugar Beet of NAAS of Ukraine
12:20 – 12:40	Company results of energy willow growing in Volyn oblast	Iryna Gnap, Salix Energy LLC
12:40 – 13:00	Company results of energy willow growing in Kyiv oblast	Sevastian Trushevskyi, UkrAgroEnergo LLC
13:00 – 13:20	Company results of Miscanthus growing in Kyiv oblast	Oleksandr Kucheruk, Energo Agrar LLC
13:20 – 14:30	Discussion of problematic issues of energy crops growing in Ukraine	Participants: Georgii Geletukha, Oleksandr Ganzhenko, Iryna Gnap, Sevastian Trushevskyi, Oleksandr Kucheruk
14:30 – 15:30	***Coffee break***	
15:30	**Closure of the Information Day**	

3.1.4. Summary of presentations

The event was opened by the Head of the State Department of Energy Efficiency of Ukraine **Sergii Savchuk**, who spoke about state support for the development of bioenergy as one of the main renewable energy sources in Ukraine, especially for replacing natural gas. In particular, Ukraine currently provides support in the form of a "green" tariff for electricity production from RES and for the 10 months of 2017 new facilities with a total installed capacity of 39 MW in biomass and 34 MW in biogas have been introduced by this tariff. According to Sergii Savchuk, currently about 4 thousand hectares are planted with perennial energy crops, which is still less than in Denmark (10 thousand hectares), Poland (13 thousand hectares), Italy (57 thousand hectares) and others. The total area under energy crops in EU countries is 140

thousand hectares, said the speaker. Ukraine has the potential of about 4 million hectares of the underutilized agricultural land, which can be used to grow energy crops and can potentially replace about 20 billion cubic meters of natural gas equal to 2/3 of the gas needs of Ukraine.

Chairman of the Bioenergy Association of Ukraine **Georgii Geletukha** spoke about the rapid pace of bioenergy development, as well as the 11% target set in the new Energy Strategy of Ukraine until 2035 in terms of biomass in the total primary energy supply structure. Also, Georgii Geletukha noted that the achievement of this goal is impossible without the involvement of agricultural biomass and energy crops. The head of the UABio also announced the existing barriers that slow down the development of the bioenergy sector today and the ways to overcome them, among which the first priority is the creation of a biofuels exchange, based on the example of the Lithuanian stock exchange BALTPOOL. The development of the necessary legislative framework for the creation of such a stock exchange is currently underway by the Bioenergy Association of Ukraine. The registration of the corresponding draft law is scheduled for December 2017.

Tetiana Zheliezna from SEC "Biomass" presented the FORBIO project, its goals and activities in the countries of the project consortium, as well as already available reports on the best practices for bioenergy policy, regulations and support schemes which allow the most sustainable and energy efficient use of bio-resources, Agronomic Feasibility, and Technical and Economic Feasibility for the Case study site in Ukraine.

Alex Savin from JSB "UkrGasBank" told about "Green banking" Strategy that bank implements together with the International Finance Corporation (IFC) including financing of renewable energy projects. Bank has been already financing 10 bioenergy projects and offers a long-term crediting from 6% in EUR (floating interest rate).

Volodymyr Kramar, Head of Energy Efficiency Division at SEC "Biomass" told about prospects of agro-biomass use for energy production in Ukraine. He gave an overview on the share of agro residues used for energy utilization in EU countries, USA and Ukraine. In addition, Dr. Kramar told about necessary equipment for procurement of agro-biomass feedstock and presented results of typical technical and economic feasibility studies for such technologies as baling and pelletizing of agro residues and energy crops, as well as use of this feedstock for heat production in biomass boilers and biomass CHP plants.

Oleksandra Tryboi from SEC "Biomass" presented the results of the FORBIO Agronomic and Technical and economic feasibility study of sustainable feedstock production in Ukraine, based on Salix Viminalis L. to produce advanced biofuels. Estimation of willow chips cost, transported at a distance of 50 km (for 10 years payback) showed that final cost at a plant gate will be 28.7€/Mg DM year.

Oleksandr Ganzhenko from the Institute of Bioenergy Crops and Sugar Beet of NAAS of Ukraine that participates in the project SEEMLA told in his presentation about sustainable cultivation of energy crops at marginal lands (SEEMLA MagLs) and presented a catalogue of energy crops, suitable for cultivation on different types of MagLs.

Iryna Gnap, Director of the "Salix Energy" LLC that owns the biggest Salix Viminalis L. plantations in Western Ukraine told in her presentation about their experience of growing energy crops and services the company can offer to beginners in this sector.

Sevastian Trushevskyi, Director for Development of the UkrAgroEnergo LLC, which is the owner of the plantation in Kyiv oblast, involved in FORBIO project as a Case study site, told about their experience of growing willow on the underutilized lands of Ivankiv region. He mentioned that according to their calculations return of investments of willow plantations cultivation happens after the second harvest.

Oleksandr Kucheruk the Managing partner at "EnergoAgrar" LLC told about experience of the company in cultivation of Miscanthus x giganteus in Ukraine, required investments in such type of business and pathways of possible utilization of the harvested biomass feedstock.

At the end of the FORBIO Info day in Kyiv, a discussion was held, where the audience asked the speakers about regulatory and practical issues of bioenergy crops cultivation in Ukraine. The discussion revealed that now a number of energy crops, including Salix Viminalis L. and Miscanthus x Giganteus are included into a Registry of plants, allowed for cultivation in Ukraine. Among problems, an issue of land allocation is still one of the most crucial ones.

3.1.5. Conclusions

The Info Day in Kyiv attracted 72 participants, among which representatives of 15 agrarian companies and farmers. Participants learnt about governmental support of electricity and heat production from biomass that can be an accompanying incentive for production of sustainable feedstock, including energy crops. An overview of bioenergy sector in Ukraine showed prospects for further development and need in attraction of agro biomass and energy crops to energy balance in order to achieve the targets set by National Renewable Energy Action Plan till 2020 and the National Energy Strategy of Ukraine till 2035. Results of FORBIO technical and economic feasibility for the Ukrainian case study site showed the viability of the sustainable production of Salix Viminalis L. as a biomass feedstock for further energy utilization. Cases from operating companies that already have industrial plantations of Salix Viminalis L. and Miscatnus x Giganteus in Ukraine presented their positive experience to the participants.

Discussions, held at the event, revealed the recent positive regulatory changes concerning the including of several energy crops into the Registry of plants, allowed for cultivation in Ukraine. However, bureaucratic process of land allocation prevents the fast pace of energy crops penetration in the country. Financial support from the government could also boost the small-scale cultivation of energy crops. The survey conducted after the event by e-mail revealed the positive feedback of the participants and interest in energy crops cultivation by several agrarians.

3.2. Info day in another Region

3.2.1. Introduction

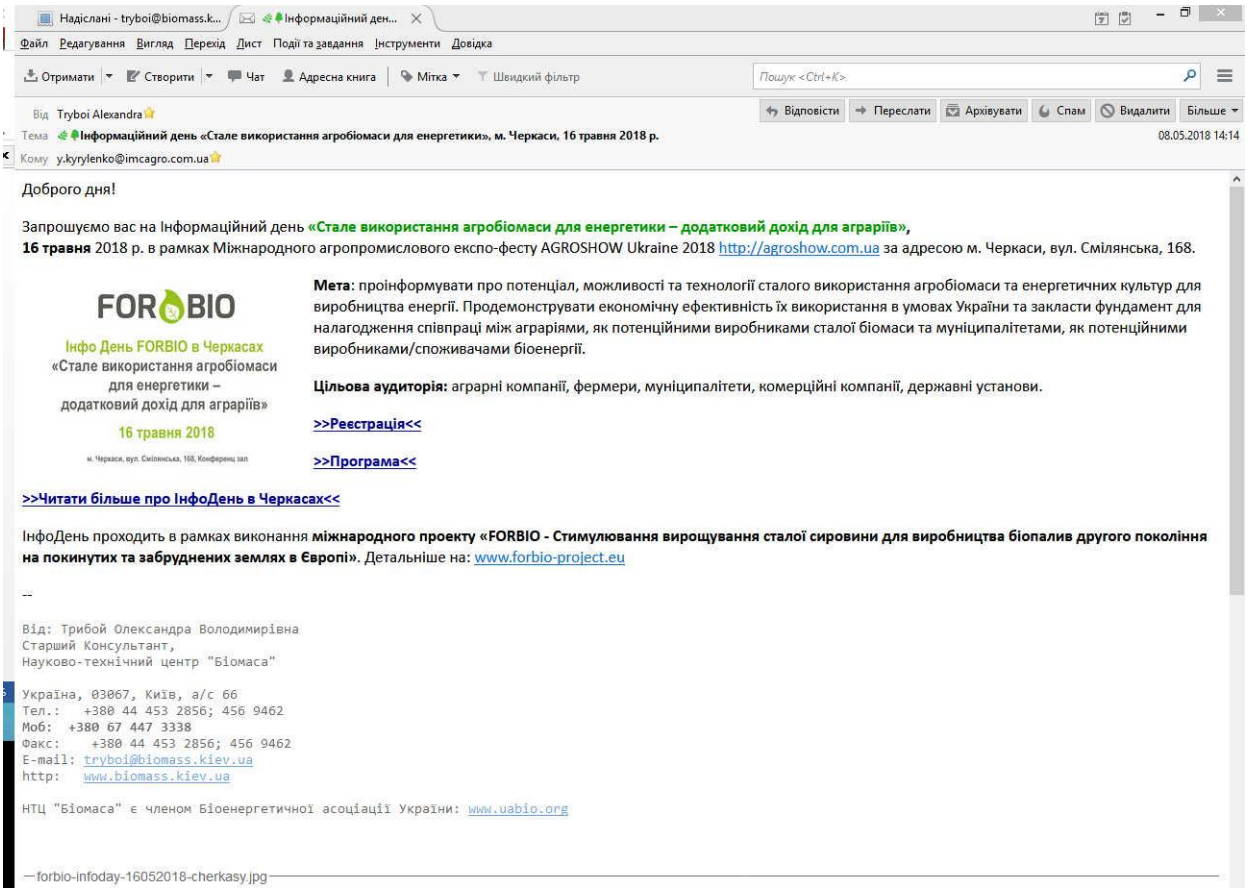
FORBIO Information Day **"Sustainable bioenergy feedstock production – additional income to farmers"** was held on May 16, 2017 in Cherkasy as another region for dissemination of the project results. **Venue** of the event was Conference Hall, located at the International agro-industrial expo-fest AGROSHOW Ukraine 2018 (http://agroshow.com.ua) on Smilyanska street, 168, Cherkasy held on 16-19 of May, 2018.

Main goals of the Info day were to inform the target audience about potential, opportunities and technologies of sustainable biomass energy plantations for energy production in Ukraine, as well as about the FORBIO project and results of the Agronomic Feasibility and Techno-Economic Feasibility of willow plantations for energy production in Ukraine by example of Ukrainian case study site of the project.

Invited **Target audience** included agrarian companies, farmers, municipalities, business companies, but also research institutes, consulting companies, public organisations, governmental institutions and media that attended the Info day.

The number of participants amounted 49 persons, including representatives from 6 agrarian companies and farmers, who received all the materials of the Info day by e-mail. The materials were also published on the websites of SEC "Biomass" (http://biomass.kiev.ua/en/news/1238-forbio-infoday-cherkasy-2018-materials), Bioenergy Association of Ukraine (http://uabio.org/en/uabio-news/3572-forbio-infoday-cherkasy-2018-materials) and FORBIO project.

3.2.2. Invitation



Надіслані - tryboi@biomass.k... | Інформаційний ден...

Файл Редагування Вигляд Перехід Дист Події та завдання Інструменти Довідка

Отримати | Створити | Чат | Адресна книга | Мітка | Швидкий фільтр | Пошук <Ctrl+K>

Від Tryboi Alexandra

Тема Інформаційний день «Стале використання агробіомаси для енергетики», м. Черкаси, 16 травня 2018 р.

Кому y.kyrylenko@imcagro.com.ua

Відповісти | Переслати | Архівувати | Спам | Видалити | Більше

08.05.2018 14:14

Доброго дня!

Запрошуємо вас на Інформаційний день **«Стале використання агробіомаси для енергетики – додатковий дохід для аграріїв»**, **16 травня** 2018 р. в рамках Міжнародного агропромислового експо-фесту AGROSHOW Ukraine 2018 http://agroshow.com.ua за адресою м. Черкаси, вул. Смілянська, 168.

FORBIO

Інфо День FORBIO в Черкасах
«Стале використання агробіомаси для енергетики – додатковий дохід для аграріїв»
16 травня 2018

м. Черкаси, вул. Смілянська, 168, Конференц зал

Мета: проінформувати про потенціал, можливості та технології сталого використання агробіомаси та енергетичних культур для виробництва енергії. Продемонструвати економічну ефективність їх використання в умовах України та закласти фундамент для налагодження співпраці між аграріями, як потенційними виробниками сталої біомаси та муніципалітетами, як потенційними виробниками/споживачами біоенергії.

Цільова аудиторія: аграрні компанії, фермери, муніципалітети, комерційні компанії, державні установи.

>>Реєстрація<<

>>Програма<<

>>Читати більше про ІнфоДень в Черкасах<<

ІнфоДень проходить в рамках виконання **міжнародного проекту «FORBIO - Стимулювання вирощування сталої сировини для виробництва біопалив другого покоління на покинутих та забруднених землях в Європі»**. Детальніше на: www.forbio-project.eu

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НТЦ "Біомаса" є членом Біоенергетичної асоціації України: www.uabio.org

forbio-infoday-16052018-cherkasy.jpg

3.2.3. Agenda

Time	Title of presentation	Speaker
11:30 - 12:00	***Registration. Morning coffee***	
12:00 – 12:20	Welcome. Development of bioenergy in Ukraine	Tetiana Zheliezna, UABio, SEC “Biomass”
12:20 – 12:40	Fostering sustainable feedstock production for advanced biofuels on underutilized land in Europe. FORBIO project of Horizon 2020	Tetiana Zheliezna, SEC “Biomass”
12:40 – 13:00	Presentation of the results of the Agronomic feasibility of the Ukrainian case study site of the FORBIO project of Horizon 2020.	Oleksandra Tryboi, SEC “Biomass”
13:00 – 13:20	Results of the Technical and economic feasibility of growing energy crops for	Oleksandra Tryboi, SEC “Biomass”

	Ukrainian case study site of FORBIO project of Horizon 2020	
13:20 – 13:40	Prospects for creation of a competitive biofuels market in Ukraine	Anna Pastukh, SEC "Biomass"
13:40 – 14:30	***Lunch***	
14:30 – 14:50	Opportunities for harvesting by-products of grain corn for energy production in Ukraine	Semen Drahniev, SEC "Biomass"
14:50 – 15:10	Biogas energy – efficient tool to enhance the economic sustainability of agricultural enterprises	Yurii Epshtein, Accord Ltd
15:10 – 16:00	***Networking and coffee***	
16:00	**Closure of the Information Day**	

3.2.4. Summary of presentations

The Info Day was opened by Dr. **Tetiana Zheliezna** from SEC "Biomass", who told the participants about present state of bioenergy development in Ukraine, as well as presented the FORBIO project of Horizon 2020 programme "Fostering sustainable feedstock production for advanced biofuels on underutilized land in Europe".

Oleksandra Tryboi from SEC "Biomass" made presentation of the Ukrainian case study site and results of agronomic feasibility, where she described the approach for identification of the underutilized lands that was used and identified energy crops, suitable for cultivation in Ukraine and especially in oblasts of Polissia region. The most suitable crops are willow and Miscanthus, and willow (Salix Viminalis L.) was chosen for the case study site, as the most promising for cultivation on the area of 2,000 ha.

In the presentation of the results of the techno-economic feasibility of growing energy crops, Oleksandra Tryboi announced the self-cost of willow chips at a plant gate, when transported at a distance of 50 km and for the payback period of 10 years (2 harvests). Comparison of the self-cost of the willow chips with the market prices for other biofuels showed the competitiveness of the cultivated biomass of Salix Viminalis L.

Anna Pastukh from SEC "Biomass" told about the state of biofuels market in Ukraine, emphasizing the existing problems that face bioenergy projects at procurement of biomass feedstock. In addition, she gave examples how these problems were solved in other countries by creating the electronic biomass exchange and told about status and introduction of biofuel market in Ukraine, which is planned for launch in March 2019.

Semen Drahniev from SEC "Biomass" told the audience about opportunities for harvesting by-products of grain corn for energy production in Ukraine. In his speech, Dr. Drahniev told that Ukraine is among leaders of corn grain production with harvest of 28 million t for 2016/017. By-products of grain corn production (stalks, leaves, cobs, cornhusks) can be used for energy production (solid biofuels, biogas, bioethanol), and there are positive examples of such utilization in the world. Possible removal of corn residues from the field can amount up to 24% in order to keep the nutrient balance of soil.

Yurii Epshtein from Accord Ltd told about the biogas technology that serves the agricultural, industrial sectors, as well as sector of municipal solid waste landfills to obtain such products as electricity, heat and fertilizers. Mr. Epshtein emphasized that compared to other renewable energy technologies, biogas production has positive effect on environment, has options to combined generation of electricity and heat, and natural gas substitution; can be used as a motor fuel (after upgrade to biomethane), gives organic fertilizers as by-products; can be easily forecasted and stored.

3.2.5. Conclusions

Information Day in Cherkasy gathered 49 participants, including representatives of Agro-Industrial Development Division of the Cherkasy Regional State Administration, Department of Agro-Industrial Complex of Kyiv Oblast State Administration, Research Institutes of the Ministry of Agrarian Policy and Food of Ukraine, agrarian companies, farmers, and producers of agricultural machinery, fertilizers and biofuel equipment, consulting companies. Discussion, held at the end of the event with the representatives of farm companies revealed that they are interested in growing energy crops, but are worried about the growth of diesel fuel prices and the long payback period of 10 years for projects with cultivation of energy crops for biomass. They emphasized that such projects need governmental support to reduce the pay-back period to 4 years, and more examples of other energy crops cultivation to prove the viability of such projects in Ukraine.

4. Info days in Germany

4.1. Info day in the target region

4.1.1. Introduction

The first information day in Germany was implemented on 6th September 2017 in Finsterwalde alongside the project meeting. It was a one-day workshop organised by FIB and WIP for the local stakeholders. The title of the event was "Sustainable feedstock production on underutilised land for new value chains". The event was implemented in the national language and translation into English was provided in addition. Different FORBIO dissemination materials were available at the event. In total 42 participants attended the information day.

4.1.2. Invitation

FORBIO OPENS NEW HORIZONS FOR BIOMASS CULTIVATION ON UNDERUTILISED LAND

The FORBIO project compiles a methodology to assess the sustainable bioenergy production potential on available underutilised land in Europe at a local, site-specific level. On that basis, the project performs comprehensive feasibility studies in selected locations of three partner countries (Italy, Ukraine & Germany). German feasibility study takes a closer look at the capitol region Berlin & Brandenburg with its (1) disused and contaminated irrigation fields and (2) raw soils on Lusatian lignite mining reclamation sites.

Thereby, FORBIO applies various approaches - easily to achieve, but also innovative - in order to develop sounding roadmaps for an advanced bioenergy cropping, e.g. the low-input production of biofuels or biopolymers. Our stated goal is to bring farmers, bioenergy producers, public institutions and policy makers together for local networks and project initiatives.

Moreover, the FORBIO project raises awareness and capacity building activities in other participating countries. Good examples and exchange of know-how are promising to achieve the European renewable energy targets.

ACTIVATING DISUSED IRRIGATION FIELDS FOR SUSTAINABLE BIOENERGY

In the late 19th century the rapid urbanisation called for reorganisation of the municipal waste water cleaning system. Thereby, especially in Berlin & Brandenburg several aspects spoke for an irrigation of sewage on low-yielding farmland. Step by step about 300 km² were remodeled for watering. Sometimes waste water treatment continued even until the late 1990s.

Irrigation led to a considerable yield improvement at first, even in commercial vegetable growing. However, excessive loads of nitrogen and numerous pollutants (heavy metals, persistent organic contaminants) are degrading soils in the long term - so-called soil sickness or irrigation tiredness.

Nowadays these sensitive sites are classified as polluted areas or potentially contaminated, abandoned land. Any food production and sometimes even the regular grassland farming are impossible. Therefore, still existing fields are looking for an alternative land use - beyond costly landscape maintenance. Undemanding feedstock production may open up new value chains, but also contributing to the desirable decontamination.

HIGH-YIELDING RENEWABLES ON LIGNITE RECLAMATION SITES

More than hundred years of lignite opencast mining have turned the traditional rural Lusatian region in a man-made landscape, with its very specific site conditions and environmental challenges. Up to now, the removed surface comprises approx. 900 km³, which takes half of the nationwide area. However, thereof about 550 km³ are already restored successfully, with 10,000 ha suitable farmland.

Set by mining and environmental law, agricultural reclamation aims at the transformation of quite infertile raw soils into productive land. That means the re-establishment of basic soil properties and functions - concerning the revitalisation, humus accumulation and biological nutrient turnover.

Within these binding reclamation targets, the production of bioenergy provides promising farming opportunities on underutilised land that still needs further soil development. Especially the cultivation of soil improving perennial crops like lucerne and fast growing woody biomass (poplar, black locust) or miscanthus serve ecological demands, economic objectives, claims of utilisation and energy policy goals.

4.1.3. Agenda

FACHTAGUNG, 6. SEPTEMBER 2017

09.00 - 09.50	Ankunft und Registrierung der Teilnehmer	im Foyer
09.50 - 10.00	**Grußworte** Michael Haubold-Rosar, FIB Rainer Janssen, WIP	
10.00 - 10.30	**Das FORBIO-Projekt: Nachhaltige Bereitstellung von Biomasse für innovative Energiekonzepte** Rita Mergner, WIP	
10.30 - 11.00	**Ehemalige Rieselfelder und Rekultivierungsflächen des Braunkohlenbergbaus für nachwachsende Rohstoffe** Raul Köhler, FIB	
11.00 - 11.30	**Nachhaltigkeitsbetrachtung der Fallstudie in Deutschland** Marco Colangeli, FAO	
11.30 - 12.00	**Diskussion: Energiepflanzenanbau unter erhöhten Anforderungen - Chancen & Barrieren**	
12.00 - 13.00	Mittagspause mit Imbiss	
13.00 - 13.30	**Böden marginaler Standorte - Definitionen, Bewertung und Potentiale für die Biomasseproduktion** Werner Gerwin, Brandenburgische Technische Universität Cottbus-Senftenberg	
13.30 - 14.00	**Wertschöpfungsketten, Bioprozesstechnologien und Biopolymere** Joachim Venus, Leipniz-Institut für Agrartechnik und Bioökonomie, Potsdam-Bornim	
14.00 - 14.30	**Stoffliche Nutzung nachwachsender Rohstoffe aus Sicht der angewandten Forschung** Bert Volkert & Johannes Ganster, Fraunhofer-Institut für Angewandte Polymerforschung, Potsdam-Golm	
14.30 - 15.00	Kaffeepause	
15.00 - 15.30	**Abschließende Diskussion und Ausblick**	
15.30 - 16.00	Ausklang	

4.1.4. Summary of presentations

The event was opened by **Michael Haubold-Rosar (FIB), Dirk Knoche (FIB)** and **Rainer Janssen (WIP)** by welcoming all participants at the event in Finsterwalde, not far away from the lignite reclamation sites. Since many years the region is influenced by the coal production activities and the FORBIO project can contribute to the sustainable reclamation of the post lignite mining sites.

Opening of the event, Michael Haubold-Rosar (FIB), Dirk Knoche (FIB), Rainer Janssen (WIP)

Participants of the information day

The FORBIO Project: Biomass Production for Innovative Energy Concepts

Rita Mergner, WIP

Mrs. Rita Mergner shortly introduced the project consortium and the main activities of the FORBIO project. The project demonstrates the viability of using underutilised lands for sustainable bioenergy feedstock production with no affect on food or feed. The project activities and outputs set the basis for building up and strengthening local bioenergy value chains that are competitive.

In the case study area in Sardinia (Italy) the investment calculations on the second-generation bioethanol production plant were based on Arundo Donax. The major impact of transport costs should be noted. Assuming 40 km radius from the plant, it represents almost 15% of the final cost. In practice, there is a distribution effect towards which the model is not sensitive, in which the fields would realistically be more or less evenly distributed at various distances within the 40 km radius. The total final cost at plant gate hypothesized in the study (71 EUR/t) could provide an acceptable business case for the plant owner, even if detailed sensitivity analysis would have to be performed considering external parameters and factors (e.g. legislation, technological optimizations, transport from Sardinia, biofuels market, fossil fuel price, other externalities etc.).

In the Ivankiv area (Ukraine) the reuse of existing areas for biomass production could be economically attractive. The major impact of the technical field cost is represented by agricultural operation and eradication costs (approximately 55%). In addition, it should be noted that the transport costs represent about 12% of the final cost (including also the cost of the handling and transport of biomass near the field), assuming a 50 km radius from the plant. It should be noted that in the feasibility study the transport cost is 30% less than that of the Italian study case because the market price of transportation in Ukraine is lower. The total final cost at plant gate hypothesized in the study (28.7 EUR/t) could provide an acceptable business case for the second-generation bioethanol plant owner, even if detailed sensitivity analysis would have to be performed considering external parameters and factors (e.g. legislation, technological optimizations, transport, biofuels market, fossil fuel price, other externalities etc.).

German case study: former sewage irrigation fields and lignite reclamation sites for bioemergy production

Raul Köhler, FIB

Mr. Raul Köhler presented the case study in Germany: former sewage irrigation fields and lignite reclamation sites. Around 1,140 ha of former sewage irrigation fields could be available for sustainable bioenergy production in the western and southern surroundings of Berlin. The most promising energy crops with acceptable yields were identified in the agronomic feasibility report. These are Miscanthus, Sorghum, Sudan grass and mixed Silphie. In addition, grass from current meadows could be an innovative option for biochemicals production via biorefineries.

In the lignite reclamation areas there is a potential of at least 7,300 ha for energy crops produciton. The most promising energy crops with acceptable yields were identified in the agronomic feasibility report. Results from field experiments showed that the most promising energy crops are forage Sorghum, Sudan grass, winter rye and winter wheat. In addition, Lucerne is an attractive perennial crop which is already grown on reclamation sites because of current management practice (a special cropping system designed for the agricultural reclamation).

Crop rotation system (lucerne and sorghum for biogas production and upgrading to biomethane, winter rye and winter wheat for other purposes) could be an option for the lignite reclamation sites. In total 18,240 t DM of Lucerne and 24,310 t DM of Sorghum would be available for bioenergy production every year. The overall costs for 20 years would reach 89 million EUR and the income could reach 85 milion EUR. Therefore, the cultivation of energy crops could be economically feasible for the lignite reclamation sites. With conservative calculations the economics is near profitability threshold. Additional option could be to focus on high-quality material utilization (e.g. biochemicals, biopolymers).

Presentation on the German case study, Raul Köhler (FIB)

Multistakeholder discussion on barriers to the market uptake of bioenergy in the case study sites in Germany

Marco Colangeli, FAO

Mr. Marco Colangeli opened a discussion on the potential environmental, social and techno-economic barriers in the case study areas in Germany. The stakeholders could provide their feedback on different barriers by selecting a different colour (green – not a barrier, yellow – could be a barrier, red – a strong barrier).

<u>Summary of the discussion on the environmental barriers</u>

- Air quality is not considered as a barrier (colour green)
- Soil quality can actually be improved via phytoremediation, therefore growing biomass feedstock has a positive impact. However, it depends on the

properties of energy crops. Annual crops could have a negative impact (e.g. soil compaction), whereas perennial crops are more suitable (green)

- Water quality could be a barrier (yellow)
- Water availability and stress (yellow)
- Biodiversity could be a barrier as marginal sites have a high biodiversity. In addition, nature conservation issues should be taken into account (yellow colour for the former sewage irrigation fields and green for the lignite reclamation sites)
- Landscape (yellow)

Summary of the discussion on the social barriers

- Land tenure (land ownership in the study area) (yellow). In the lignite reclamation areas, the farmers can decide on further use of the available land.
- Employment in agriculture (green)
- Income generation (yellow). The direct payments from the EU after 2020 might end up or become lower.
- Health conditions and implications; health safety (yellow)
- Novelty acceptance and stakeholder's buy-in and ownership, confidence level (new value chains) (yellow)
- Financial Security (long term vs short term contracts) (red)
- Use of multi-purpose feedstock (risk for contaminated feed) (yellow)

Summary of the discussion on the techno-economic barriers

- Profitability (market conditions for biomass production, costs & revenue analyses, etc.) (red)
- Access to credit (loans, microloans, equity, other forms of financing for this kind of value chains) (yellow)
- Incentives (tax breaks, tariffs, etc.) (red)
- Capacity development (human and institutional) (yellow)
- Agronomic needs (materials, inputs, techniques, equipment, training) (green)

Marco Colangeli, FAO

The SEEMLA Project – Sustainable exploitation of biomass for bioenergy from marginal lands

Werner Gerwin, BTU

Mr. Werner Gerwin presented the main activities of the SEEMLA project. The project aims to promote the re-conversion of marginal lands for the production of bioenergy through the direct involvement of farmers and other relevant stakeholders.

The energy scenario 2050 for Germany is not feasible only with biobased residual and waste materials. Therefore, biomass production on marginal lands can play an important role in the mobilization of additional biomass sources.

The SEEMLA target regions are Lusatia, in Germany, East Macedonia and Thrace, in Greece, as well as Vinnitsa, Poltava Volyn and Lviv in Ukraine. Main factors that will be considered are sustainability parameters, biomass productivity, economic balance, technical and financial resources for biomass exploitation, plant characteristics and accessibility. The potentials of marginal sites for biomass yields are limited and clearly related to soil fertility/marginality. The Müncheberger Soil Quality Rating method provides an easy access to marginality assessment. SEEMLA case study sites mainly show poor or very poor soil conditions.

Werner Gerwin, BTU

Supply chains, bioprocess technologies, biopolymers

Mr. Joachim Venus, ATB

Mr. Joachim Venus presented the research programme on material and energetic use of biomass. The approach is to use biomass for materials (fibers, insultation, biotechnological products) followed by the energetic use (biogas, wood pellets, biochar) as this creates a higher added value from the biomass feedstocks.

Biobased products and processes from renewable resources not only help preserve the environment and climate, but also make a significant contribution to the structural change from a petrochemical to a biobased industry, with related opportunities for growth and employment. Industrial biotechnology, also known as white biotechnology, is an important driving force in this transition. For example, biorefineries can produce biochemicals which are a high value products and contribute to green chemistry. One possibility is to use grass as feedstock for biorefineries for the production of biochemicals such as amino acid or lactic acid. The market for lactic acid is growing as it is largely used in various industrial applications such as in biodegradable polymers, food & beverages, personal care products, and pharmaceutical industries. The lactic acid market is mainly driven by its end-use industries. In 2013, Biodegradable polymers formed the largest application for lactic acid, followed by food and beverages. The lactic acid market is estimated to grow in the future.

Scale-up of lactic acid production would require clean, cheap sugars from lignocellulosic biomass to compete with commodity sugar and starch substrates. There is a lack of data about lactic acid production and purification from biomass

hydrolysates, including issues of C5 sugar utilization, although it appears work has started to address some of these issues.

Pilot facility for production of lactic acid at the ATB consequently fills a gap in the various phases of bioprocess engineering. Provision of product samples is intended to open up the possibility of interesting partners in industry with specific product requirements in various applications: The main goals of the pilot facility are to try existing and new methodologies for bio-processing of agri-food residues, to identify major added-value products (chemicals, materials and fuels) to be produced from biomass (product-driven biorefining), to demonstrate the most promising biowaste valorisation processes at a larger scale and to provide product samples for industrial partners/customers with specific product requirements in various applications.

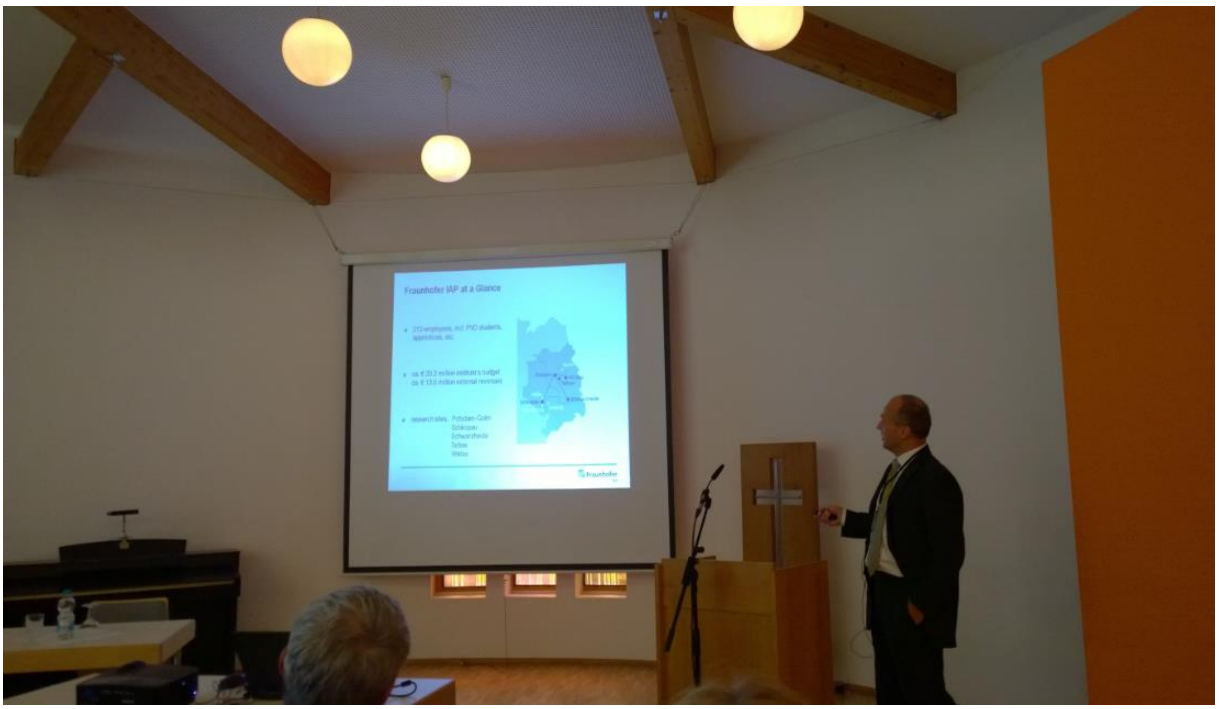
Joachim Venus, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB)

Renewable raw feedstock used for materials from an applied research perspective

Bert Volkert, Fraunhofer IAP

Mr. Bert Volkert presented different material sources from biomass (agricultural raw materials and forestry raw materials). Biobased polymers (e.g. thermoplastics) is quite a promising option. Cellulose ethers can be used for extracting carboxymethylcellulose, methylcellulose, hydroxypropylcellulose, hydroxyethylcellulose and ethylcellulose. Man-made fibers for textiles can be also produced from biobased polymers.

Cellulose sulfate can be used as an encapsuling material in medicine for micro encapsulation of living cells for the use in cancer therapy. Celluloseacetat from dissolving pulps can be used for the production of LCD polarizer film cover (film application), cigarette filter tow, transparent book pages, coatings, eye glass frames, combs, jewlery etc. To sum up, biomass has a potential for materials use in different fields, however further research is needed. In addition, economics and sustainability of the production process should be considered.



Bert Volkert, Fraunhofer Institute for Applied Polymer Research IAP

4.2. Info day in another Region

4.2.1. Introduction

The second information day was organized on 27 June 2018 by WIP and FIB in collaboration with Leibniz-Institut für Agrartechnik und Bioökonomie (ATB) in their premises in Potsdam. The title of the event was "FORBIO Fachtagung: Grüne Bioraffinerien – Innovative Wertschöpfung zur Nutzung von Grünland" or "FORBIO workshop: Green Biorefineries - Innovative value creation for the use of grasslands". The event was mainly held in national language, but some presentations and discussions were held in English. In total 26 participants attended the event.

The invitation was sent to stakeholders from different regions in Germany which have high amount of grass lands and underutilized land and not only from one other region with the aim of maximising the dissemination effect and trying to reach the maximum regions possible. A follow-up summary was sent to all the invited stakeholders who could not attend.

4.2.2. Invitation

ORGANISATORISCHES

Tagungsort: Hauptgebäude (Haus A), R A 101 (1. Etage)

Der ursprünglich links hinter dem Haupteingang befindliche P-Platz existiert nicht mehr (Neubauvorhaben), so dass sich die Stellplätze nun verteilt auf dem ATB-Gelände befinden.

ANMELDUNG

Bitte per E-Mail oder Fax bis 15. Juni 2018 an:

WIP Renewable Energies
Cosette Khawaja

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WWW.FORBIO-PROJECT.EU

FORBIO

Nachhaltige Biomasseerzeugung auf Sonderstandorten für neue Wertschöpfungsketten

EINLADUNG

ZUR FORBIO FACHTAGUNG

GRÜNE BIORAFFINERIEN – INNOVATIVE WERTSCHÖPFUNG ZUR NUTZUNG VON GRÜNLAND

27. JUNI 2018

FORBIO wird durch die Europäische Kommission im EU-Rahmenprogramm für Forschung und Innovation Horizont 2020 finanziert (Projekt-Nr. 691846).

HERZLICH WILLKOMMEN!

Sehr geehrte Damen und Herren,
werte Kolleginnen und Kollegen,

zur FORBIO Fachtagung "Grüne Bioraffinerien – Innovative Wertschöpfung zur Nutzung von Grünland" laden Sie WIP Renewable Energies, das Leibniz-Institut für Agrartechnik und Bioökonomie und das Forschungsinstitut für Bergbaufolgelandschaften herzlich ein.

Zeit:
27. Juni 2018, von 09:00 bis 19:00 Uhr

Ort:
Leibniz-Institut für Agrartechnik und Bioökonomie (ATB)
Max-Eyth-Allee 100, D-14469 Potsdam

Über Ihre Teilnahme freuen wir uns.

Dr. Rainer Janssen
Geschäftsführer Projektabteilung
WIP Renewable Energies

Dr. Joachim Venus
Programmkoordinator
Leibniz-Institut für Agrartechnik und Bioökonomie e.V.

Dr. Dirk Knoche
Stellvertretender Direktor
Forschungsinstitut für Bergbaufolgelandschaften e.V.

UNSER PROGRAMM

09.00-09.50	Ankunft und Registrierung der Teilnehmer	
09.50 - 10.00	Grußworte	Joachim Venus, ATB Rainer Janssen, WIP
10.00 - 10.15	Verwendung von grüner Biomasse als Nährstoff in Fermentationsprozessen	Joachim Venus, ATB
10.15 - 10.30	Das FORBIO-Projekt: Nachhaltige Bereitstellung von Biomasse für innovative Bioökonomiekonzepte	Rainer Janssen, WIP
10.30 - 11.00	Kaffeepause	
11.00 - 11.30	Ehemalige Rieselfelder für den Anbau nachwachsender Rohstoffe – Chancen und Barrieren	Dirk Knoche, FIB
11.30 - 12.00	Grüne Bioraffinerien - Wertschöpfungspotentiale im großen Stil?	Michael Mandl, tbw Research
12.00 - 13.00	Mittagspause	
13.00 - 13.30	Die grüne Bioraffinerie Brensbach – Neue Wertschöpfung für den ländlichen Raum	Michael Gass, Biowert Industrie GmbH
13.30 - 14.00	Refining proteins from green crops using lactic acid fermentation and obtaining feed products for animals	Mette Lübeck, Aalborg University
14.00 - 14.30	GRASSA! More value from Green!	Ad Crommentuijn, GRASSA!
14.30 - 15.00	Abschließende Diskussion und Ausblick	
15.00 - 15.30	Kaffeepause	
15.30 - 17.00	Besuch der ATB-Pilotanlage zur Produktion von Milchsäure aus Biomasse	
19.00	Gemeinsames Abendessen	

WEITERE INFORMATIONEN

In FORBIO werden Machbarkeitsstudien zur Erzeugung nachwachsender Rohstoffe auf Sonderstandorten durchgeführt. Darin lässt sich eine unerwünschte Flächenkonkurrenz zur Nahrungs- und Futtermittelproduktion vermeiden. Gleiches gilt gegenüber Erholungs- und Naturschutzflächen. Unser Projekt fördert den Aufbau lokaler Wertschöpfungsketten für innovative Bioenergiekonzepte - unter ökonomischen, ökologischen und sozialen Gesichtspunkten.

Das Leibniz-Institut für Agrartechnik und Bioökonomie e.V. (ATB) beforscht als national und international agierendes Forschungszentrum die Schnittstelle von biologischen und technischen Systemen. ATB entwickelt und integriert neue Technologien und Managementstrategien für eine wissensbasierte, standortspezifische Produktion von Biomasse und deren Nutzung für die Ernährung, als biobasierte Produkte und Energieträger – von der Grundlagenforschung bis zur Anwendung.

4.2.3. Agenda

UNSER PROGRAMM

09.00-09.50	Ankunft und Registrierung der Teilnehmer	
09.50 - 10.00	Grußworte	Joachim Venus, ATB Rainer Janssen, WIP
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15.00 - 15.30	Kaffeepause	
15.30 - 17.00	Besuch der ATB-Pilotanlage zur Produktion von Milchsäure aus Biomasse	
19.00	Gemeinsames Abendessen	

4.2.4. Summary of presentations

The Info day was opened by **Joachim Venus (ATB)** and **Rainer Janssen (WIP)** who welcomed the participants at the event and in Potsdam.

Joachim Venus (ATB) started the first presentation by explaining how their institute use green biomass to produce biobased materials and energy through fermentation processes. Their mission is to model and evaluate bio-economic production systems, develop and integrate new technologies and management strategies for a knowledge-based, site-specific production of biomass, and its use for food, as bio-based materials and fuels - from basic research to application. Dr. Venus pointed out the importance of biorefineries which contributes significantly to the structural change from a petrochemical to a biobased industry. He then gave a technical overview of the products resulting from the fermentation processes.

Joachim Venus, ATB

Rainer Janssen (WIP) began his presentation by giving an overview of WIP activities and continued by presenting the FORBIO project, its structure, the partners involved, the main objectives and the summary results of the agronomic and techno-economic feasibility studies in the 3 case study regions of the project.

Rainer Janssen, WIP

Dirk Knoche (FIB) talked about the chances and barriers of the former sewage irrigation fields for the cultivation of renewable raw materials. He presented in detail the agronomic and techno-economic feasibility studies of the German Case study of the FORBIO project on the former sewage irrigation fields pointing out that there are 2 feasible options to make use of these fields for the biobased industry. One option is to plant Miscanthus and sell the chips to power plants in the vicinity and the second option is to use the growing grass in the biorefineries to produce biobased materials and bioenergy.

Dirk Knoche, FIB

Michael Mandl (tbw research) spoke first about the basic concepts of green biorefineries. Grassland areas, where the classic uses (milk, meat …) fail or when there's an agricultural structural change (No livestock on smaller farms), are a good alternative for the biorefinery concept. Furthermore, unused grass is an interesting resource for biorefineries where valuable products can be obtained such as proteins (AA, PP), soluble sugars, lignocelluloses (fiber fraction) and some specific chemicals. Mr. Mandl showed the different technological processes of the biorefineries and the products obtained mentioning their application and their market size. Then Mr. Mandl talked about the problems which face biorefineries by pointing out that the technologies are not mature enough (yield, efficiency, quality), they face lack of organization, cooperation and legal barriers and the market and the prices are low.

Michael Mandl, tbw Research

Michael Gass (Biowert Industrie GmbH) started his presentation by defining the Biorefinery as a sustainable, integrative, multifunctional overall concept where the biomass is used for the production of various intermediates and products (chemicals, materials, energy, food / feed). Then he talked about the Biowert biorefinery processes and cycle, and gave an overview of the resulting produces. Mr. Gass showed some products that can be made from their main produce „AgriPlast" – granules made of 75% of cellulose fibers and 25% of thermoplastics (PLA, PCL, PE, PP, recycled or biodegradable plastics). In the end, Mr. Gass pointed out the economic, ecologic and social benefits of the biorefineries.

Michael Gass, Biowert Industrie

Products made from produce of Biowert Industrie

Mette Lübeck (Aalborg University) gave a presentation on refining proteins from green crops using lactic acid fermentation and obtaining feed products for animals. The research is based on the vision of developing sustainable farming systems based on locally produced feeds. Prof. Lübeck showed the process developed in the "OrganoFinery" project, the protein and amino acids recoveries from different crops and the results of the different trials on animals. She concluded her presentation by stating that approximately 700 kg of crude protein/ha can be extracted from fresh grass with a good content level of essential amino acids and lactic acid as an extra product in the protein concentrate, the concentrate can substitute soy protein in the diet of animals, silage of grass press cake is a valuable forage for dairy cows and that the press cake and residual juice are valuable for biogas production.

Mette Lübeck, Aalborg University

Ad Crommentuijn (GRASSA!) spoke about the biobased business concept of GRASSA! Grassa develops and markets worldwide biorefining machines to add value to green biomass streams, to create a robust financial model for the farmer, grower, vegetable processor, nature and water management, by which locally more feed and food is delivered with a reduction of the ecological footprint. Mr. Crommentuijn explained in detail the solutions they offer for agriculture and environmental problems and showed the biorefining mobile machine which breaks apart green streams via a patented process for the production of the various GRASSA! Products.

Ad Crommentuijn, GRASSA!

After the presentations, Joachim Venus made a tour with the participants in the ATB Pilot plant where he explained about the different raw materials they use to convert biomass to lactic acid pointing out that the processes are different for each raw material. He also showed the different products that can be produced from them.


BREAD4PLA PROJEKT
DEMONSTRATIONS-PROJEKT ZUR HERSTELLUNG VON POLYMILCHSÄURE-BIOPOLYMER (PLA) AUS RESTSTOFFEN DER BACKWARENINDUSTRIE
Status: in Bearbeitung
Call: LIFE10 ENV ES 479
ZIELSTELLUNG:
ERWARTETE ERGEBNISSE:
National & international network
Augenschutz benutzen

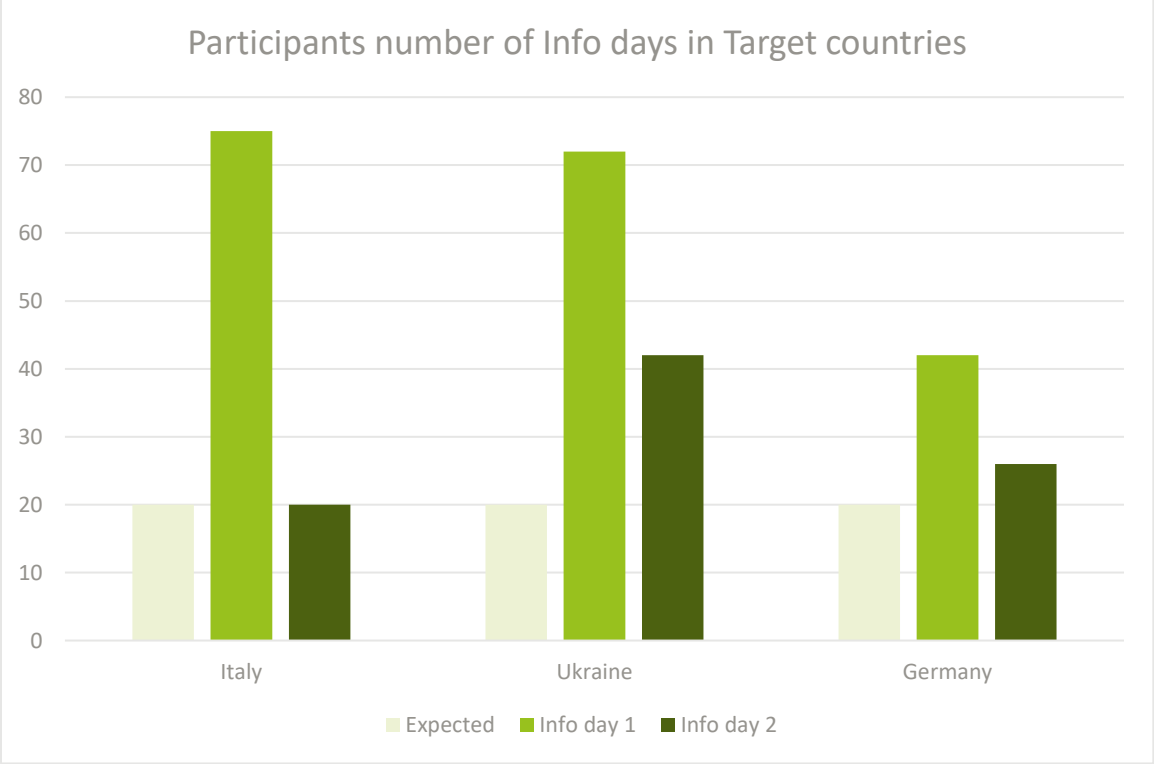
4.2.5. Conclusions

The participants showed a big interest to the various presentations in particular to the industry representatives and many questions were raised especially concerning the sustainability of the Grassa and Biowert biorefinery concepts, their electricity consumption and the impacts of the side streams of the processes in case of Grassa. The speakers emphasized that in both concepts there are no negative environmental impacts but, in the opposite,, there are many benefits on the environment and that they are economically viable provided that the products are well marketed.

5. Overall impacts of the information days

The information days in the three target countries were very successful. They were attended by 284 stakeholders from different categories (farmers and representatives of farmers, agronomists and agriculture professional organisations, researchers, industries, representatives of local municipalities, regional agencies, governemental institutions, local investors, business and bioenergy associations, NGOs, media and consultants) and from different regions. The communication impact which was foreseen for the workshops in the target regions and that is 20 participants per workshop was more than reached as it is shown in the table below.

Furthermore, the dissemination of the results of the info days went to beyond the participants as the summaries of the events were sent not only to the ones who attended the info days but also to all invited stakeholders inclusing a big list of farmers, agrarian associations, governmental bodies etc. In addition, the presentations were also uploaded on the website of the FORBIO project as well.



The objectives of the events were fulfilled as the main focus was on disseminating the outcomes of the project focusing on the agronomic and techno-economic feasibinlity studies made in the target regions pointing out that building sustainable bioenergy supply chains on underutilised land for bioenergy production is indeed feasible. The events contributed to open discussions between the different stakeholders who showed a big interest to build up such value chains.