



**SWEETFUEL Project No: FP7-227422**

***Draft (V1)***

***Plan for Use and Dissemination  
of Foreground  
(P.U.D.F.)***

***WP 7 : DISSEMINATION OF RESULTS***

***Participants : WIP, CIRAD, ICRISAT, EMBRAPA, ARC-GCI, UANL, KWS, IFEU,  
UNIBO***

***WP7 leader : WIP***

**Task 7.5 : Elaboration of a dissemination and exploitation plan  
DELIVERABLE No. 7.6 : Draft Plan of Exploitation of Plant material**

***June 2010***

# Contents

## Sommaire

<b>1</b>	<b>INTRODUCTION .....</b>	<b>3</b>
<b>2</b>	<b>DISSEMINATION ACTION PLAN .....</b>	<b>3</b>
2.1	SCIENTIFIC PUBLICATIONS AND COMMUNICATION.....	4
2.1.1	<i>Publications in reviewed international journals .....</i>	4
2.1.2	<i>Scientific seminars and conferences.....</i>	7
2.2	STAKEHOLDERS DATABASE .....	7
2.3	TECHNICAL PUBLIC DISSEMINATION ACTIONS .....	8
2.3.1	<i>Regional Workshops.....</i>	9
2.3.2	<i>Sweet Sorghum Handbook .....</i>	10
<b>3</b>	<b>POLICY DEVELOPMENTS AND CIVIL SOCIETY.....</b>	<b>10</b>
3.1	E.C. FP7 VISIBILITY POLICY.....	11
3.2	PROJECT WEBSITE .....	11
3.3	COMMUNICATION STRATEGY .....	12
3.3.1	<i>Project Flyer.....</i>	12
3.3.2	<i>SWEETFUEL Newsletter .....</i>	14
3.3.3	<i>TV reportage/documentaries, bandes dessinées, etc.....</i>	14
3.4	INTERNATIONAL EVENTS, EXHIBITIONS AND CONFERENCES .....	14
3.5	POLICY BRIEFS.....	14
<b>4</b>	<b>DEMONSTRATION ACTIVITIES.....</b>	<b>15</b>
4.1	HYBRID SEED MULTIPLICATION OF SELECT HYBRIDS .....	15
4.2	LARGE SCALE CULTIVATION IN FARMERS FIELDS .....	15
<b>5</b>	<b>EXPLOITATION STRATEGY .....</b>	<b>16</b>
5.1	LIST OF IPRs (BACKGROUND) CONSORTIUM MEMBERS HAVE APPLIED FOR.....	17
5.1.1	<i>Plant material and germplasm.....</i>	17
5.1.2	<i>Existing confidentiality and secrecy agreements .....</i>	17
5.1.3	<i>Development of an internal database.....</i>	17
5.1.4	<i>Other background included.....</i>	18
5.2	THE PROJECT'S FOREGROUND AND ITS PROVISIONAL USE.....	18
5.2.1	<i>Identification of plant variety foreground.....</i>	20
5.2.2	<i>Further description .....</i>	20
5.3	PROTECTION OF FOREGROUND.....	21
<b>6</b>	<b>THE BASIC PRINCIPLES FOR JOINT OWNERSHIP AGREEMENTS.....</b>	<b>21</b>
6.1	CRITERIA FOR DETERMINING JOINT OWNERSHIP OF FOREGROUND .....	21
6.2	METHODOLOGY FOR PROTECTION OF SHARED FOREGROUND .....	21
6.3	SOCIO-ECONOMIC ASSESSMENT OUTCOMES.....	21
6.4	POTENTIAL COMMERCIAL EXPLOITATION.....	21
6.5	THE POTENTIAL MARKETS .....	22
6.6	SHARING OF ROYALTIES .....	22
6.7	THIRD PARTIES AND AFFILIATES .....	22
<b>7</b>	<b>POTENTIAL RISKS AND CONTINGENCY PLAN.....</b>	<b>22</b>
<b>8</b>	<b>ETHICAL AND SUSTAINABILITY ANALYSIS ON SWEETFUEL RESEARCH .....</b>	<b>22</b>
8.1	ETHICAL EX-ANTE ANALYSIS.....	22
8.2	MONITORING AND EVALUATION ON ETHICAL QUESTIONS .....	23
8.3	ETHICAL EX-POST ANALYSIS.....	23

8.4	RECOMMENDATIONS ON FUTURE USE OF SWEET SORGHUM AS BIOENERGY SOURCE .....	23
9	CONCLUSION .....	23

## 1 Introduction

The SWEETFUEL *Draft Plan for use and dissemination of foreground (PUDF)* is elaborated in order to coordinate dissemination activities with exploitation strategies throughout the project so as to guarantee effective dissemination without hampering potential intellectual property protection and exploitation.

The objective of the project SWEETFUEL is to exploit the advantages of sweet sorghum as potential energy crop through the development of bioethanol production from sweet sorghum in temperate and semi-arid regions by genetic enhancement and the improvement of cultural and harvest practices for optimized yields. The project aims at producing new varieties of sweet sorghum, better adapted to low temperature for temperate environments, and to drought and/or soil acidity for semi-arid tropics.

This document will facilitate and promote dissemination and exploitation efforts in compliance with the terms of the DoW and the General Conditions of the signed General Agreement as well as the Consortium Agreement.

The *PUDF* will be continuously updated by the SWEETFUEL participants' inputs. The final dissemination and exploitation plan (month 60, December 2013) will describe the participants' actual achievements in dissemination and the strategic plan for the exploitation of results.

The IPUDC (Intellectual Property Use and Dissemination Committee) will coordinate dissemination and exploitation activities within the project and monitor compliance with the regulations, the contractual structure with EU and the decision-making processes detailed in the Consortium Agreement. The minutes of the meetings of this Committee will be attached to this Action Plan.

## 2 Dissemination action plan

The PUDF strategic plan targets to enhance scientific publications as the cornerstone of the further development of this Action Plan which targets to link dissemination and demonstration activities with the objectives of protecting Sweetfuel's joint foreground for exploitation after completion of the Project.

WP7 and WP6 collaborate on the stakeholders' analysis together with socio-economic, environmental and ethical assessments that will underlie the evolution and implementation of this Action Plan.

According to the Description of Work, the following deliverables are earmarked for public dissemination :

<b>Del.</b>	<b>Item</b>	<b>Diss. Method</b>	<b>Diss. Level</b>	<b>Dates</b>
7.1	Stakeholder database available	Other	Public	From 2
7.3	Website operational	Other	Public	4
7.4	Articles published in press and international scientific journals	Other	Public	<b>From 12</b>
7.5	Handbook and flyers on ethanol production from sweet sorghum elaborated	Other	Public	56
7.7	Final plan of exploitation of plant material available	Other	Public	60
7.8	Validation of the concept in India	Demonstration	Public	60

All other deliverables are submitted to a confidential dissemination level. Subject to decisions of the G.A. are the requests for changes in the ranking of this level (e.g. "confidential" may need to become "public" and *vice-versa*).

## 2.1 Scientific publications and communication

In compliance with the General Conditions of the G.A. and the C.A., scientific articles, publications and communication about the SWEETFUEL project will be validated by the G.A. assisted by the IPUDC as set out below.

### 2.1.1 Publications in reviewed international journals

The Project participants are invited to anticipate on their scientific publications and submit sufficient details to the Consortium.

IPUDC will analyze the publication project, detect – if any – potentialities for exploitation and inform the S.C. and G.A. about actions that could be undertaken.

**Table 1a: Provisional list of reviewed publications (Status: June 2010)**

<b>Publication reference</b>	<b>Partner</b>	<b>Potentiality for exploitation/use</b> E.g. confidentiality, secrecy, ...	<b>Decisions status</b>	<b>Actions to be taken</b>
<b>To be completed by each Participant</b>	45 days notice	IPUDC	Each Participant (adversely affected)	General Assembly
Review article on sweet sorghum agronomy (under consideration)	UNIBO	N/A		
Master Thesis "HETEROSIS IN TRAITS RELATED WITH ETHANOL PRODUCTION IN SWEET SORGHUM"	UANL	IPUDC	Each Participant (adversely affected)	General Assembly

Master Thesis "DIFFERENT FERTILIZATION DOSES AND TOPOLOGICAL ARRANGEMENTS IN SWEET SORGHUM"	UANL	IPUDC	Each Participant (adversely affected)	General Assembly

The Project coordinator with WP7 will follow-up on publications progress by means of a roadmap (table 2 & 2bis : Roadmap for publication projects).

**Table 2b: Provisional list of non-reviewed publications (Status: June 2010)**

Publication reference	Author(s)	Title	Potentiality for exploitation/ use E.g. confidentiality , secrecy, ...	Decisions status	Actions to be taken
Proc. of 18th OTTI Symposium Bioenergy, 19-20 November 2009, Bad Staffelstein, Germany	EXAMPLE: Dominik Rutz, Rainer Janssen, WIP	Auswirkung internationaler Biokraftstoffproduktion auf Mensch, Gesellschaft und Umwelt	N/A	N/A	N/A
Proc. of 18th European Biomass Conference and Exhibition, Lyon, France 4-7 May 2010	Walter Zegada-Lizarazu, Andrea Monti, Department of Agroenvironmental Science and Technology, University of Bologna	Rooting characteristics and aboveground biomass development of sweet sorghum and ethanol maize under water deficit			
Proc. of 18th European Biomass Conference and Exhibition, Lyon, France 4-7 May 2010	Rainer Janssen, Dominik Rutz, Serge Braconnier, et al.	Sweet Sorghum – An Alternative Energy Crop	N/A	N/A	N/A
CIENCIA UANL (Internal Journal of UANL)	Francisco Zavala Garcia, Jose E. Treviño Ramirez and Eduardo Garcia Zambrano, UANL, Mexico	SUGAR ACCUMULATION IN THE STEM OF DIFFERENT GENOTYPES OF SWEET SORGHUM BY BRIX READINGS	N/A	N/A	N/A

**Table 2 : Road map for the publication of project results (status : date)**

Scientific objective of the paper (focal point)	author list (Identify the first author)	Scientific and writing task repartition	Journal selected	dead line foreseen	presence of confidential data	first draft (date)	manuscript submission to IPUDC (date)	IPUDC comments	manuscript submission to the journal (date)	status of the manuscript (accepted / revision / rejected)	major reviewers' comments	submis. revised version (date)	final status	publication (date)		
														on line	final	
Review article on sweet sorghum agronomy	Walter Zegada-Lizarazu and Andrea Monti	Department of Agroenvironmental Science and Technology University of Bologna, Italy	tbd	tbd	No	tbd	tbd									

**2 bis : Follow-up on manuscripts to be modified (status : date)**

manuscript modification (content)	new selected journal	submission of modified manuscript (date)	status of the manuscript (accepted / revision / rejected)	major reviewers' comments	submission of manuscript revised (date)	manuscript final status	publication (date)	
							on line	finalize

## 2.1.2 Scientific seminars and conferences

Activities and results of the SWEETFUEL project are presented by SWEETFUEL partners on national and international events. The consortium members and bodies commit themselves to respect the European FP7 visibility guidelines. Communication tools can be written paper documents, posters, flyers, ICT's, publication and so forth.

The Project participants are invited to anticipate on their seminars and conferences and submit sufficient details to the Consortium IPUDC 45 days prior to starting the activity.

**Table 3 : Provisional list of presentations (Status: June 2010)**

Event	Speaker / Participant	Title of presentation	Target audience	Potential outcomes	Potentiality for exploitation /use	Decisions status	Actions to be taken
18th OTTI Symposium Bioenergy, 19-20 November 2009, Bad Staffelstein, Germany	EXAMPLE: Dominik Rutz, Rainer Janssen, WIP	Auswirkung internationaler Biokraftstoffproduktion auf Mensch, Gesellschaft und Umwelt			IPUDC	Each Participant (adversely affected)	General Assembly
18th European Biomass Conference and Exhibition, Lyon France 4-7 May 2010	Walter Zegada-Lizarazu, Andrea Monti, Department of Agroenvironmental Science and Technology, University of Bologna	Rooting characteristics and aboveground biomass development of sweet sorghum and ethanol maize under water deficit	Scientists, planners, decision takers, and students	Feedback and information dissemination	IPUDC		General Assembly
18th European Biomass Conference and Exhibition, Lyon, France 4-7 May 2010	Rainer Janssen, Dominik Rutz, WIP	Sweet Sorghum – An Alternative Energy Crop	Scientists, industry, decision makers	Feedback and information dissemination	IPUDC		General Assembly
BIOMONTERREY International Symposium, October 2010	Francisco Zavala Garcia, UANL, Mexico	APOYO EN LA BIOTECNOLOGIA PARA LA PRODUCCION DE BIOETANOL EN SORGO DULCE	Scientists, students	Feedback and information dissemination	IPUDC		General Assembly

## 2.2 Stakeholders Database

This Action Plan will support consultation and integration of stakeholders in project activities **if not confidential**. Thereby, regional stakeholder campaigns will constitute a relevant framework for getting support from stakeholders to open the market potential of Sweet Sorghum in Brazil, India, South Africa, Mexico, as well as in European countries, in a first stage.

The SWEETFUEL stakeholder database<sup>1</sup> is set-up in order to facilitate exchanges and transfer of information, **if not confidential** (see dissemination levels in DoW)

<sup>1</sup> It needs to be agreed upon by the Governing Bodies, of the Consortium whether this DDB will be posted on the internal, confidential Intranet of the Sweetfuel Project or will be opened for global access on the project's external Website and under what conditions.

**Table 3: Number of stakeholders in the database**

Region	Number of stakeholders in the database	Date
Africa	20	June 2010
Asia	0	June 2010
Latin America	2	June 2010
Europe	6	June 2010
International Members	0	June 2010
<b>Total</b>	<b>28</b>	<b>June 2010</b>



**SWEETFUEL - Sweet Sorghum: An Alternative Energy Crop**

**Associate Partner Application Form**

(Please type or use block letters)

Family Name \_\_\_\_\_  
 First Name \_\_\_\_\_  
 Firm/Organisation \_\_\_\_\_  
 Address \_\_\_\_\_  
 Postal Code and City \_\_\_\_\_  
 Country \_\_\_\_\_  
 Tel. \_\_\_\_\_  
 Fax \_\_\_\_\_  
 eMail \_\_\_\_\_  
 Internet \_\_\_\_\_

SWEETFUEL Associate Partners will be regularly informed about events and activities of the SWEETFUEL project. Associate Partners are invited to make use of the dissemination platform established in the framework of the project.

Associate Partners are requested to notify the project coordinator about the use of information and documents gained through the SWEETFUEL project. Within the SWEETFUEL project no budget can be allocated to Associate Partners.

By signing this form the applicant agrees that Associate Partners are published in a database on the SWEETFUEL website.

Signature \_\_\_\_\_ Date \_\_\_\_\_

 SWEETFUEL is co-funded by the European Commission in the 7th Framework Programme

**Please fill in the following short questionnaire**

*1) In which Work Package(s) of the SWEETFUEL project are you interested?*

WP 1: Breeding for low temperature environments  
 WP 2: Breeding for drought environments  
 WP 3: Breeding for lo-fertility soil environments  
 WP 4: Functional analysis of adaptation and productivity  
 WP 5: Package production and crop modelling  
 WP 6: Integrated assessment

*2) Please briefly describe your company / organisation / institute!*

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

*3) Please describe your motivation for applying as SWEETFUEL Associate Member!*

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

*4) Please attach a short organisation profile and CV to your application (optional; by mail!)*

*5) Please complete, sign and return (Form, Questionnaire) by fax to:*

WIP Renewable Energies  
 Dr. Rainer Janssen; Dominik Rutz  
 Sylvanstr. 2  
 81369 München  
 Germany  
 Fax: +49-89-720 12 791; (Tel. +49-89-720 12 743)  
 Email: [rainer.janssen@wip-munich.de](mailto:rainer.janssen@wip-munich.de); [dominik.rutz@wip-munich.de](mailto:dominik.rutz@wip-munich.de)  
 Web: [www.wip-munich.de](http://www.wip-munich.de); [www.sweefuel-project.eu](http://www.sweefuel-project.eu)

 SWEETFUEL is co-funded by the European Commission in the 7th Framework Programme

**Figure 1: SWEETFUEL Associate Membership Application Form (Status: 21 June 2009)**

The stakeholder database will be up-dated continuously and new stakeholders will be added regularly. This database will be used in order to contact stakeholders in a pro-active way and to disseminate **non-confidential** project activities, information and deliverables, according to the decisions of the Consortium.

To promote exchanges between RTD experts, stakeholders and key actors, all interested persons are invited to complete the SWEETFUEL Associate Membership application form to become an associate member of the project.

### 2.3 Technical public dissemination actions

In addition to the scientific publications and communication, the Project Participants target to focus also on wider public dissemination of technical aspects that can be disclosed (non-confidential). Two approaches are foreseen :

### **2.3.1 Regional Workshops**

Regional workshops will be organized in India, South Africa, Brazil, Mexico and Europe in the last year of the SWEETFUEL project. All stakeholders including representatives of National Agriculture Research Systems (NARS) and/or Extension services, seed companies, farmers, farmers' organization, NGOs, entrepreneurs, policy makers will be contacted for their participation.

It will be attempted to organise these regional workshops in close cooperation with other projects such as the COMPETE Platform (coordinated by WIP) or the project "Biofuels Research for Development" (coordinated by ICRISAT). Indicative dates for the regional stakeholder workshops in South Africa, Brazil, Mexico and India are months 49, 52, 55, and 58, respectively.

The regional workshop in Europe will be organised in year 5 of the SWEETFUEL project on the occasion of the annual European Biomass Conference and Exhibition. Within a special session of the conference on 'Innovative Energy Crops' results of the SWEETFUEL project will be presented to a wide audience of European and international stakeholders.

**Table 4: SWEETFUEL Regional Workshops**

Date	Country	Location	Title/TOPIIC	Target audience	Organiser
tbd. (month 49)	South Africa	tbd.	tbd.		tbd.
tbd. (month 52)	Brazil	tbd.	tbd.		tbd.
tbd. (month 55)	Mexico	tbd.	tbd.		tbd.
tbd. (month 58)	India	tbd.	tbd.		tbd.
tbd. (month 60)	Europe	tbd.	tbd.		tbd.

### 2.3.2 Sweet Sorghum Handbook

A specific handbook with recommendations for sweet sorghum cultivation for ethanol production will be written and disseminated to the stakeholders during the regional workshops and by the project web site.

The handbook will be elaborated by WIP in close cooperation with the project partners. A first draft of the handbook will be prepared until month 30 (June 2011)<sup>2</sup>. The handbook will be available in the following languages : Portuguese, Spanish, French, English.

**Table 5: Time schedule for the handbook elaboration (Status: June 2010)**

Activity	Lead partner	Edition	Target stakeholders	Updates	Status
Elaboration of the 1 <sup>st</sup> Draft of the Handbook	WIP				Planned in June 2011
Finalisation of the Handbook	WIP				Planned in August 2013

## 3 Policy developments and civil society

In general, market penetration of a new agricultural/energy commodity depends on the political and regulatory framework conditions, which in turn require competences within the public institutions.

This action plan attempts to contribute to the creation of favourable framework conditions for sweet sorghum as an alternative energy crop by providing public policy makers with information on the science-based opportunities, probable commercial and environmental impacts and technical implication of sorghum based fuel generation.

It is also important that the results, approaches and methodologies are passed on to national and private sector research systems which are to take on the technological lead.

<sup>2</sup> Special attention will be granted to potential intellectual property drawbacks.

### 3.1 E.C. FP7 Visibility policy

Dissemination and communication of the Project shall be in compliance with the EU visibility regulations, i.e. [http://ec.europa.eu/europeaid/work/visibility/index\\_en.htm](http://ec.europa.eu/europeaid/work/visibility/index_en.htm)

Acknowledgment :

For patent filing :

**The work leading to this invention has received funding from the [European Union] [European Atomic Energy Community] Seventh Framework Programme ([FP7/2007-2013] [FP7/2007-2011]) under grant agreement n° [ xxxxxx].**

For dissemination :

**The research leading to these results has received funding from the [European Union] [European Atomic Energy Community] Seventh Framework Programme ([FP7/2007-2013] [FP7/2007-2011]) under grant agreement n° [ xxxxxx].**

### 3.2 Project Website

A well-designed dynamic website was developed and is continuously up-dated throughout the project duration: <http://www.sweetfuel-project.eu/>. If not confidential, project deliverables and publications will be available and workshops and activities will be promoted.

The decision whether data are moved from Intranet to Internet, or, whether these data are posted on the Website will be validated by the G.A. assisted by the IPUD-Committee.

The website will be publicly available and a useful source of information for the RTD audience but also for other stakeholders. It will be possible for all website users (stakeholders and Beneficiaries) to provide feedback on the project activities and publications.

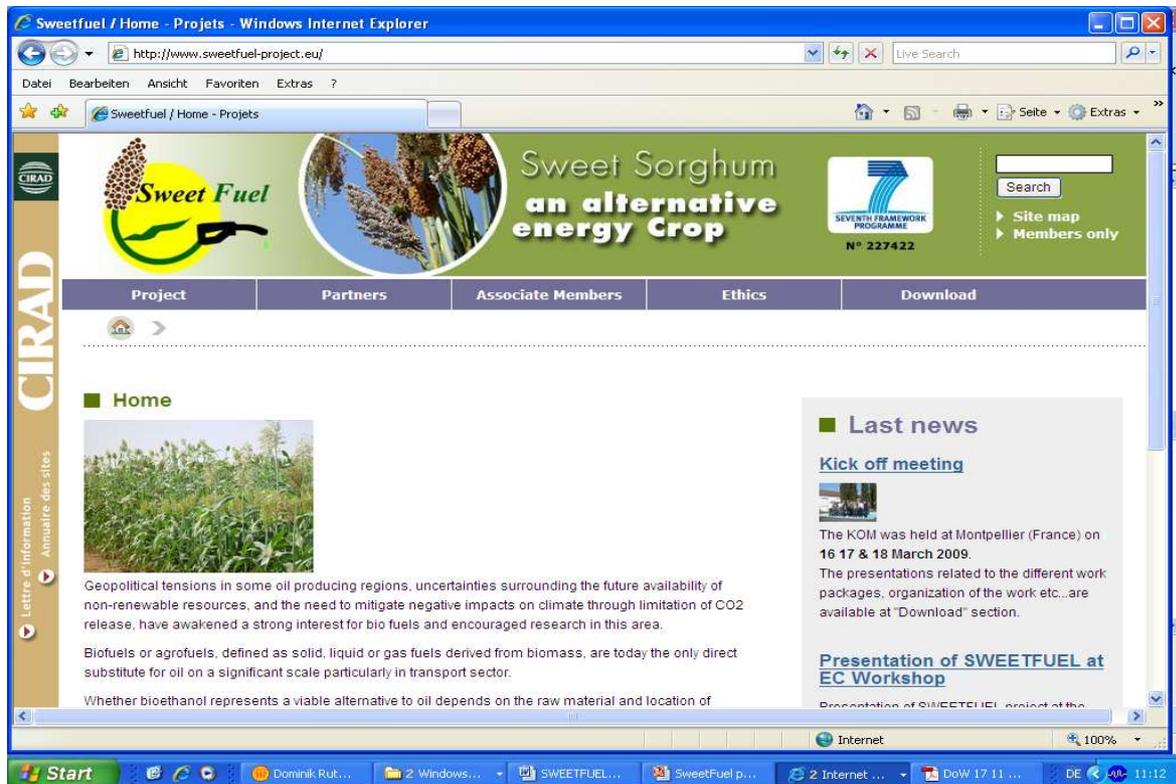


Figure 2: SWEETFUEL Website (Status: 21 June 2009)

### 3.3 Communication strategy

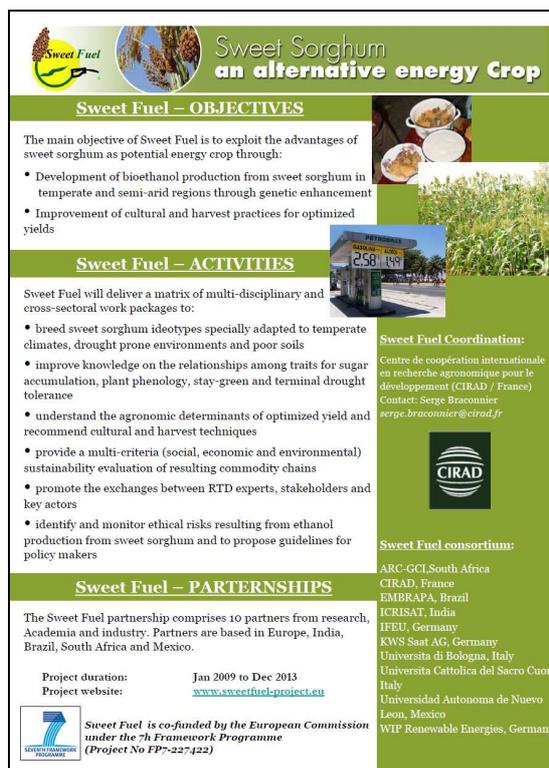
#### 3.3.1 Project Flyer

In order to promote the SWEETFUEL project, WIP and the participants of WP7 elaborated a project flyer which is distributed on all SWEETFUEL events as well as on many national and international events.

Languages ???

**Table 6: SWEETFUEL dissemination activities (Status: June 2010)**

Event	Audience/Number of Participants	Project Partner
Meeting of the FP7 project "4F Crops" in Madrid, Spain, March 2009	30 participants from Europe	Serge Braconnier, CIRAD
Twinning programme "Soil, Plant and Food Research between the EU, Argentina and MERCOSUR", in Argentina, 7-8 May 2009	35 participants from Europe, Argentina and MERCOSUR	Serge Braconnier, CIRAD
EU-Canada Twinning Workshop, 16-17 June 2009, Pisa, Italy	30 participants from Europe and Canada	Dominik Rutz and Rainer Janssen, WIP
17th European Biomass conference and Exhibition in Hamburg, Germany, June/July 2009	1800 participants from Europe and worldwide	Dominik Rutz and Rainer Janssen, WIP
Annual Meeting of the RED MEXICANA DE BIOENERGIA (Mexican Net of Bioenergy) in Mexico, November 2009	80 participants from Mexico	Francisco Zavala Garcia, UANL
EU-India Scientific and Technical Days in New Delhi, India, November 2009	80 participants from India and Europe	Serge Braconnier, CIRAD
Final Conference of "COMPETE – Competence Platform on Energy Crops for Africa", Brussels, November 2009	100 participants from Europe and Africa	Serge Braconnier, CIRAD, Dominik Rutz and Rainer Janssen, WIP
2 <sup>nd</sup> Meeting of the FP7 project "4F Crops" in The Netherlands, March 2010	30 participants from Europe	Serge Braconnier, CIRAD
18th European Biomass Conference and Exhibition, Lyon, France 4-7 May 2010	2000 participants from Europe and worldwide	Walter Zegada-Lizarazu, Andrea Monti, UNIBO,
List to be completed (tbc.) by ALL partners!!!		



**Sweet Sorghum  
an alternative energy Crop**

**Sweet Fuel – OBJECTIVES**

The main objective of Sweet Fuel is to exploit the advantages of sweet sorghum as potential energy crop through:

- Development of bioethanol production from sweet sorghum in temperate and semi-arid regions through genetic enhancement
- Improvement of cultural and harvest practices for optimized yields

**Sweet Fuel – ACTIVITIES**

Sweet Fuel will deliver a matrix of multi-disciplinary and cross-sectoral work packages to:

- breed sweet sorghum ideotypes specially adapted to temperate climates, drought prone environments and poor soils
- improve knowledge on the relationships among traits for sugar accumulation, plant phenology, stay-green and terminal drought tolerance
- understand the agronomic determinants of optimized yield and recommend cultural and harvest techniques
- provide a multi-criteria (social, economic and environmental) sustainability evaluation of resulting commodity chains
- promote the exchanges between RTD experts, stakeholders and key actors
- identify and monitor ethical risks resulting from ethanol production from sweet sorghum and to propose guidelines for policy makers

**Sweet Fuel Coordination:**  
Centre de coopération internationale en recherche agronomique pour le développement (CIRAD) / France  
Contact: Serge Braconnier  
[serge.braconnier@cirad.fr](mailto:serge.braconnier@cirad.fr)

**Sweet Fuel consortium:**  
ARC-GCL South Africa  
CIRAD, France  
EMBRAPA, Brazil  
ICRISAT, India  
IEFU, Germany  
KWS Saat AG, Germany  
Universita di Bologna, Italy  
Universita Cattolica del Sacro Cuore, Italy  
Universidad Autonoma de Nuevo Leon, Mexico  
WIP Renewable Energies, Germany

**Sweet Fuel – PARTERSHIPS**

The Sweet Fuel partnership comprises 10 partners from research, Academia and industry. Partners are based in Europe, India, Brazil, South Africa and Mexico.

Project duration: Jan 2009 to Dec 2013  
Project website: [www.sweetfuel-project.eu](http://www.sweetfuel-project.eu)

**Sweet Fuel is co-funded by the European Commission under the 7th Framework Programme (Project No FP7-227422)**

**Figure 3: SWEETFUEL Flyer (Status: 21 June 2009)**

### 3.3.2 SWEETFUEL Newsletter

Tbc .....

### 3.3.3 TV reportage/documentaries, bandes dessinées, etc.

Tbc .....

## 3.4 International events, exhibitions and conferences

A “Watch” mechanism will be set up in order to be informed in due time of international events such as exhibitions, expo’s, etc.

**Table 7: International events, exhibitions and conferences (Status: June 2010)**

Event	Speaker / Participant	Title of presentation	Target audience	Potential Policy outcomes	Actions to be taken
18th OTTI Symposium Bioenergy, 19-20 November 2009, Bad Staffelstein, Germany	EXAMPLE: Dominik Rutz, Rainer Janssen, WIP	Auswirkung internationaler Biokraftstoffproduktion auf Mensch, Gesellschaft und Umwelt			General Assembly
18th European Biomass Conference and Exhibition, Lyon, France 4-7 May 2010	Walter Zegada-Lizarazu, Andrea Monti, Department of Agroenvironmental Science and Technology, University of Bologna	Rooting characteristics and aboveground biomass development of sweet sorghum and ethanol maize under water deficit	Scientists, planners, decision takers and students	Feedback and information dissemination	General Assembly

## 3.5 Policy briefs

Example : <http://www.cirad.fr/actualites/toutes-les-actualites/articles/2009/ca-vient-de-sortir/perspective>

## 4 Demonstration activities

### 4.1 Hybrid seed multiplication of select hybrids

Sweet sorghum is new to most farmers though they are quite familiar with grain/dual purpose (grain + stover) sorghum cultivation. SWEETFUEL intends to make the farmers familiar with the crop and demonstrate the economic gain with sweet sorghum cultivation using the new hybrids (1 or 2). Seed multiplication will be undertaken to produce sufficient seed (200 kg) for large scale demonstration.

### 4.2 Large scale cultivation in farmers fields

Farmers in the vicinity of RUSNI distilleries India pvt Ltd (30 km radius) will be identified to grow the crop in at least 20 ha with a buy-back arrangement between farmers and RUSNI distilleries. The hybrid seed and the package of practices will be supplied from ICRISAT to ensure high productivity. This cultivation will start in month 50 with the available adapted plant material, to provide data which will be analyzed before presented at the final meeting.

Prior to this, the status of the hybrid seeds will be sourced : A process of tracking the demonstration seed hybrid material will be developed, namely by means of signed MTAs in order to explicitly testify the status of the seed material and whether or not the sweet-sorghum growers are entitled to multiply the material, incl. the sample seed material.

**The Coordinator and the Governing Bodies of the Consortium will decide, prior to any RUSNI cultivation, about whether specific agreements, e.g. confidentiality agreement, secrecy agreement, etc. are necessary to safeguard the potential joint foreground of the Consortium.**

**Table 8: Time schedule for the demonstration organisation (Status: 21 June 2009)**

Activity	Lead partner	Status
Seeds multiplied (200 kg)	ICRISAT	Planned in December 2012
<b>Confidentiality agreement with RUSNI</b>	<b>COORDINATOR (CIRAD)</b>	
Farmers in the vicinity of RUSNI distilleries India pvt Ltd (30 km radius) will be identified	ICRISAT	Planned in December 2012
Start of the cultivation	ICRISAT	Planned in February 2013
Feedback on growing results from field demonstration	ICRISAT	
...		

## 5 Exploitation Strategy

In order to ensure the best possible benefits for stakeholders from the research results of the SWEETFUEL project, an exploitation strategy is drafted below. This exploitation strategy intends to take into account all relevant Intellectual Property Right (IPR) issues.

This strategy has the following items :

- A (verifiable) list of all IPR the Consortium members have applied for or registered, if applicable, i.e. Background;
- A list of the results the Consortium members consider for commercial or industrial applications;
- Joint Ownership Agreements :
  - Methods for identifying the shares of joint ownership
  - Methodology for protection of foreground, , i.e. who is entitled to register, to file, etc.
  - Exploitation strategies, i.e. countries' differentiation
  - Etc.

**Choices of the Consortium are needed with regard to :**

- **direct or indirect exploitation schemes ?**
- **involving the whole consortium or only some of the members (joint ownerships) ?**
- **level of protection ?**
- **geographical differentiation for commercial exploitation ?**
- **the markets, e.g. seed market Latin America, Eastern Europe, Asia, Africa, ... ?**
- **need for exploitation through separate legal entities ?**
- ...

## 5.1 List of IPRs (Background) Consortium members have applied for

The project aims to develop and release new varieties of sweet sorghum, better adapted to (i) low temperature for temperate environments and to (ii) drought and/or soil acidity for semi-arid tropics.

### 5.1.1 Plant material and germplasm

The legal status of each shared entries (cf. Background) will be verified to determine its protection system such as:

**Table 9: Plant material provided by SWEETFUEL beneficiaries**

<i>Genetic resources, Breeding material Plant variety, ...</i>	<i>Legal status<sup>3</sup></i>	<i>Owner<sup>4</sup></i>	<i>Use in SWEETFUEL<sup>5</sup></i>	<i>Comments<sup>6</sup></i>
	Patent, licence, ...			
	COV (Certificat d'obtention variétale) UPOV (Union internationale pour la protection des obtentions variétales),			
	Convention on Biological Diversity (Rio Conference, 1992),			
	The International Treaty on Plant Genetic Resources for Food and Agriculture (FAO, 2001).			

### 5.1.2 Existing confidentiality and secrecy agreements

.....

### 5.1.3 Development of an internal database

International and national legislation encourage breeders to exchange biological material in compliance with the international procedures.

A database (developed by the Coordinator) will source the biological material within the consortium, facilitating their exchanges within breeding programmes and the tracking of IPR contributions to jointly developed foreground.

It is suggested to keep track of discussions about MTA models, clauses and exchange difficulties, in order to enhance common understanding and to possibly develop an internal knowledge base. The evolution of this internal debate could provide further policy developments in order to overcome difficulties concerning access rights to biological material background within FP7 funded research projects.

<sup>3</sup> Licence, COV (Certificat d'obtention variétale) UPOV (Union internationale pour la protection des obtentions variétales), Convention on Biological Diversity (Rio Conference, 1992) or the International Treaty on Plant Genetic Resources for Food and Agriculture (FAO, 2001)

<sup>4</sup> Short name of the SWEETFUEL partner or other owner.

<sup>5</sup> Description for what plant material is used in the SWEETFUEL project.

<sup>6</sup> Any other comment.

### 5.1.4 Other background included

**Table 10: Other background included**

<i>... e.g.</i>	<i>Legal status</i>	<i>Owner</i>	<i>Use in SWEETFUEL</i>	<i>Comments</i>
Resources				
Publications				
Techniques				
Know-how				
Traditional/local knowledge				

## 5.2 The Project's Foreground and its provisional use

The table below allows for defining foreground having a potential for further research activities or for developing, creating and marketing a product, a process or a specific innovative service and thus industrial or commercial exploitation.

Table 11: Results developed by SWEETFUEL participants

Date	Foreground	Description	Joint Owners	Exploitable product(s) or measure(s) or service(s)	Sector(s) of application	Target groups of end-users	Countries of application	Ethical aspects	Socio-economic assessment
				<i>Hybrids</i>	Industrial plantations/seed				
	<i>Biotech</i>								
	<i>Genomics</i>								
	<i>Know-how</i>								
	<i>Pilot sites/techniques</i>				Farmers				
	<i>Traditional knowledge</i>								
	....								

### 5.2.1 Identification of plant variety foreground

For each new foreground (plant variety) developed, a specific exploitation plan will be outlined depending on geographical and climatic destination :

- New varieties for cool temperate climate and environments,
- New varieties for semi-arid, tropical and sub-tropical climate,
- New varieties for acid soils in moist tropical savannahs

<b>Plant variety:</b>	The plant variety will be included here
<b>Legal status:</b>	The legal status will be included here
<b>Owners:</b>	The owner will be included here
<b>Protection &amp; Exploitation Plan</b>	
A detailed description will be included here (see below).	

**Table 4: Exploitation Plan for Plant Variety xxxxx**

### 5.2.2 Further description

The consortium Members and Governing entities may decide that further, additional, research and development work is necessary, including the need for further collaboration, prior to commercial exploitation of foreground of one or another result.

To this regard, following explanations are provided :

Questions to be tackled/result	Provisional answers
RESULT N°1 : .....	
How the result might be exploited (products, processes) - directly (spin offs etc) or indirectly (licensing) – on an individual basis or as a consortium or as a group of partners	
○ any prior technical and economic market considerations – commercial and technical thresholds etc.	
○ any obstacles identified which might prove to be barriers to commercialization <ul style="list-style-type: none"> <li>▪ the existence or development of similar or competing technologies / solution elsewhere</li> <li>▪ third party rights (eg patents belonging to competitors), standards,...</li> <li>▪ analysis of any (potential) non-technical obstacles any form of non-commercial use or impact, relating e.g. to the development of new standards or policies</li> </ul>	
○ any form of non-commercial use or impact, relating e.g. to the development of new standards or policies	
Any commercial contacts already taken, demonstrations given to potential licensees and/or investors and any comments received (market requirements, potential etc.)	
Where possible, also include any other potential impact from the exploitation of the result (socio-economic impact)	

### 5.3 Protection of Foreground

During the SWEETFUEL project new plant material will be developed. The principle to protect the property of the new plant material will be made through COV in the UPOV system as detailed in the DoW. The costs for filing and maintaining protection levels will be supported by the owners of the Foreground.

As soon as protection measures<sup>7</sup> are needed for further exploitation (or further research) and/or prior to dissemination activities (e.g. publications and communication), Project Participants will start the setting up of Joint Ownership Agreements, that include protection strategies.

## 6 The Basic Principles for Joint Ownership Agreements

### 6.1 Criteria for determining Joint Ownership of Foreground

tbc

### 6.2 Methodology for protection of shared foreground

Tbc

*The monitoring of the commercial exploitation of new varieties could be left to SICASOV (Société cooperative d'intérêt collectif agricole des sélectionneurs obtenteurs de variétés végétales), which has more than 30 years international experience in that domain.*

### 6.3 Socio-economic assessment outcomes

tbc

### 6.4 Potential commercial exploitation

Thanks to this flexible system, exploitation of new commercial varieties bred by the project will be possible through licences with variable level of royalties based on the economic development level of the considered country.

Countries :

Licensee(s) :

Licensor :

Conditions : Geographical differentiation for potential commercial exploitation

*In countries without any efficient seed sector new varieties will be disseminated through the National Agricultural Research System or Extension Services. They will be informed about the new varieties through workshops organized by SWEETFUEL or other projects like COMPETE, activities of members of the project having an international mandate like ICRISAT or CIRAD, as well as through information available at the SWEETFUEL website.*

*In this case new plant material also needs to be protected so as to guarantee access of the "less developed countries (which)" to this new material.*

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<sup>7</sup> (patents, design rights, database rights, plant varieties, etc – including references and details)

## 6.5 The potential markets

Potential market and turnover : tbc

Need for indirect exploitation through separate legal entities (???) : tbc

- e.g. KWS ... for temperate markets ??
- e.g. ICRISAT for operational seed producing systems in developing countries ... ??
- e.g. anticipating of international companies exploiting specific low-rate advantages in developing countries,

Financial analysis : tbc

## 6.6 Sharing of Royalties

The sharing of the royalties from the commercial exploitation will respect the rights defined here above, in strict compliance with international rules, with the wish to allocate them first for the development of research programmes initiated by SWEETFUEL.

tbc

## 6.7 Third Parties and Affiliates

tbc

## 7 Potential risks and contingency plan

tbc

## 8 Ethical and sustainability analysis on SWEETFUEL research

An external expert of ethics is involved in the project, who is responsible for an ex-ante and an ex-post ethic analysis. The expert closely follows-up on the research activities of the Project on regular basis and provides input on ethical aspects.

### 8.1 Ethical ex-ante analysis

The ethical expert made an ex-ante analysis interviewing the SWEETFUEL partners on ethical issues. The questionnaire included 6 questions:

1. Do you see the risks/opportunities from the adoption of the results of SFP on the actual production of **food** (for people) or **feed** (for animals)? Which? How to prevent or mitigate them?
2. How do you see the risks/opportunities of the adoption of the results of SFP on the **employment** and local **income**? How to mitigate the negative effects?
3. Are there, according to your view, implications concerning **environmental** assets (soil, water, air etc)? Which?
4. In spite of respecting the Convention of Biological Diversity and the International Treaty on Plant Genetic Resources for Food and Agriculture (FAO), do you see any risk concerning:
  - the **repartition of benefits**?
  - the unfair appropriation of **local knowledge**?
  - challenges to **social and cultural patterns** at the level of the communities that originally cultivate sweet sorghum?

5. Do you think precautions should be adopted within SFP in order to prevent further risks when the results of the research will be **disseminated**? Which?
6. How do you see the idea of disseminating the new material according to different strategies of payment for **licenses** considering the level of development of each user? Do you think this issue is clear and precise enough to all partners, and will be clear for those who will collaborate (directly or indirectly) with the SFP?

## **8.2 Monitoring and evaluation on ethical questions<sup>8</sup>**

### **8.3 Ethical ex-post analysis**

### **8.4 Recommendations on future use of sweet sorghum as bioenergy source**

## **9 Conclusion**

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<sup>8</sup> An ‘exclusively’ EX POST ethical analysis may not be “enough”, the ethical questions need to be examined as they come up and the governing bodies should integrate the questions into the project at a regular pace. If this were not possible, the potential impact of the ethical questions on the project and its outcomes needs to be carefully analysed and mitigations measures explored.

**Table 5: Chart for the SWEETFUEL activities in WP7 (60 month)**

Task	Dissemination of results	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	
7.1	Stakeholders database																															
7.2	Regional workshops																															
7.3	Project website development and maintenance																															
7.4	Project presentation and sweet sorghum handbook																															
7.5	Elaboration of an exploitation plan																															
7.6.	Demonstration of sweet sorghum viability																															
7.6.1.	<i>Seed multiplication of improved material from WP2 and/or W3</i>																															
7.6.2.	<i>Large scale cultivation in farmers field</i>																															