The SWEETFUEL project - Sweet Sorghum: An alternative energy crop

The project SWEETFUEL is supported by the European Commission in the 7th Framework Programme to exploit the advantages of sweet sorghum as potential energy crop for bioethanol production. Thereby, the main objective of SWEETFUEL is to optimize yields in temperate, sub-tropical and tropical regions by genetic enhancement and the improvement of cultural and harvest practices.

The duration of the SWEETFUEL project is from January 2009 until June 2014. Information on the project is available at the website [www.sweetfuel-project.eu](http://www.sweetfuel-project.eu).

The SWEETFUEL partnership is coordinated by the Centre International en Recherche Agronomique pour le Développement (CIRAD) from France and comprises the following 10 partners from research, academia and industry:

- CIRAD (coordinator), France
- ICRISAT - International Crops Research Institute for Semi-Arid Tropics, India
- EMBRAPA Maize and Sorghum, Brazil
- KWS SAAT AG, Germany
- IFEU Institute, Germany
- Universita di Bologna (UNIBO), Italy
- Universita Cattolica del Sacro Cuore (UCSC), Italy
- Agricultural Research Council (ARC) – Grain Crop Institute (GCI), South Africa
- Universidad Autónoma de Nuevo León (UANL), Mexico
- WIP Renewable Energies, Germany

The SWEETFUEL project activities are implemented along the following work packages (WP).

- WP1: Breeding for temperate environments
- WP2: Breeding for drought prone environments
- WP3: Breeding for low-fertility soil environments
- WP4: Functional analysis of adaptation and productivity traits
- WP5: Cultural practices and crop modelling
- WP6: Integrated sustainability assessment
- WP7: Dissemination of results

This SWEETFUEL NEWSLETTER presents recent results within WP1 on “Breeding for low temperature environments”, WP2 on “Breeding for drought prone environments”, WP3 on “Breeding for low-fertility environments”, WP5 on “Cultural practices and crop modelling”, WP6 on “Integrated assessment” and “SWOT analysis”, as well on “Ethical issues”. Furthermore, information is presented on a regional workshop in South Africa, as well as results of the SWEETFUEL International Workshop in India on 3-7 March 2014 and information on the

SWEETFUEL Regional Workshop in Europe, 26 June 2014

Task Leader: WIP Renewable Energies, Germany

The SWEETFUEL Regional Stakeholder Workshop in Europe on “Energy Sorghum – An Alternative Crop for Industrial Use” will take place on 26 June 2014 in Hamburg, Germany on the occasion of the 22nd European Biomass Conference and Exhibition (EU BC&E).

In this workshop activities and findings of the SWEETFUEL project will be discussed with international stakeholders representing feedstock suppliers, entrepreneurs, NGO’s, policymakers, and agricultural research institutions.

Specific emphasis will be placed on the opportunities and challenges of energy sorghum breeding for industrial applications (e.g. biogas and lignocellulosic ethanol production) in Europe.

In case you are interested in participating in the SWEETFUEL Regional Workshop in Europe, please get in contact with the workshop organisers.

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Conference Venue: CCH – Congress Center Hamburg, Room [], Hamburg, Germany

Conference Language: English

For more information on the SWEETFUEL Regional Workshop and the preliminary agenda, please visit: http://www.sweetfuel-project.eu/.

International Workshop and SWEETFUEL Meeting in India, 3-7 March 2014

Task Leader: ICRISAT - International Crops Research Institute for Semi-Arid Tropics, India

This SWEETFUEL “International Sweet Sorghum Workshop” was organised by ICRISAT in Patancheru, Hyderabad, India, on 3-7 March 2014.

In this workshop activities and findings of the SWEETFUEL project were presented and discussed. Furthermore, project participants from India and partnering countries presented an overview of current research and development initiatives in the field of bioenergy, sweet sorghum as a sustainable biofuel feedstock.

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For more information on the SWEETFUEL International Workshop, please visit: http://www.sweetfuel-project.eu/.
WP2 – Breeding for Drought Prone Environments

Work Package Leader: International Crops Research Institute for The Semi-Arid Tropics (ICRISAT), Patancheru, Andhra Pradesh, 502 324, India

Partners: Agricultural Research Council – Grain Crops Institute (ARC-GCI), Potchefstroom, South Africa and Universidad Autonoma De Nuevo Leon (UANL), San Nicolas de los Garza, Mexico.

In the following recent research results in India, Mexico and South Africa within WP2 on “Breeding for Drought Prone Environments” are briefly presented.

Contribution by Nemera Shargie

Multilocation testing to identify promising varieties/hybrids

In South Africa, during 2013/14 season a total of 26 sweet sorghum entries (12 for mid-season and 14 for terminal moisture stress trials, respectively) were tested in a multi-location trial (MLT) to select best varieties and hybrids. The MLT was planted in three replications in a randomized complete block design at two locations at Potchefstroom (Figure 1) and Taung (Figure 2). Juice extraction (Figure 3) and brix recording activity is currently in progress.

Figure 1: Partial view of MLT at ARC-GCI, Potchefstroom, South Africa

Figure 2: Partial view of MLT at Taung Experimental Farm, South Africa

Figure 3: Juice extraction operation from MLT samples, ARC-GCI, Potchefstroom, South Africa
SWEETFUEL Exploitable Results – Exploitation Flyers

Task Leader: WIP Renewable Energies, Germany

In order to facilitate the commercial exploitation of SWEETFUEL results, several exploitable results have been identified and SWEETFUEL Exploitation Flyers have been elaborated.

These leaflets will serve to inform interested stakeholders from industry, research, Government and civil society about concrete SWEETFUEL exploitable results and potential future cooperation opportunities.

The following SWEETFUEL Exploitation Flyers are currently available:

- New male lines for biomass hybrids (WP1), Contact: CIRAD, France, Dr. Gilles Trouche (gilles.trouche@cirad.fr)
- New early A/B female lines for biomass hybrids (WP1), Contact: CIRAD, France, Dr. Gilles Trouche (gilles.trouche@cirad.fr)
- New germplasm A/B pairs with low lignin content (WP1), Contact: CIRAD, France, Dr. Gilles Trouche (gilles.trouche@cirad.fr)
- New sweet sorghum cultivar - ICSV 93046 (WP2), Contact: ICRISAT, India, P. Srinivasa Rao (p.srinivasarao@cgiar.org)
- New sweet sorghum cultivar for terminal drought stress tolerance - ICSV 25311 (WP2), Contact: ICRISAT, India, P. Srinivasa Rao (p.srinivasarao@cgiar.org)
- New sweet sorghum cultivar for terminal drought stress tolerance - ICSV 25308 (WP2), Contact: ICRISAT, India, P. Srinivasa Rao (p.srinivasarao@cgiar.org)
- New sweet sorghum cultivar for mid-season drought stress tolerance - ICSV 25300 (WP2), Contact: ICRISAT, India, P. Srinivasa Rao (p.srinivasarao@cgiar.org)
- New sweet sorghum cultivar for mid-season drought stress tolerance - ICSV 12012 (WP2), Contact: ICRISAT, India, P. Srinivasa Rao (p.srinivasarao@cgiar.org)
- New sweet sorghum cultivar for rainy season adaptation - ICSV 25339 (WP2), Contact: ICRISAT, India, P. Srinivasa Rao (p.srinivasarao@cgiar.org)
- New sweet sorghum cultivar for rainfed growing condition - OPV 007 (WP2), Contact: Agricultural Research Council (ARC) – Grain Crop Institute (GCI), South Africa, Wikus Snijman (snijmanw@arc.agric.za)
- Adaptability of commercial biomass sorghum hybrids to cold conditions (WP5), Contact: University of Bologna, Italy, Andrea Monti and Walter Zegada Lizarazu (a.monti@unibo.it, walter.zegadalizarazu@unibo.it)
- Perspectives for farmers to harvest and in-field store sweet sorghum juice and bagasse (WP5), Contact: University of Bologna, Italy, Andrea Monti and Walter Zegada Lizarazu (a.monti@unibo.it, walter.zegadalizarazu@unibo.it)
- SWOT Analysis – Sweet Sorghum as Energy Crop (WP6), Contact: WIP Renewable Energies, Germany, Dominik Rutz and Rainer Janssen (dominik.rutz@wip-munich.de, rainer.janssen@wip-munich.de)
- Energy Sorghum Handbook (WP7), Contact: WIP Renewable Energies, Germany, Cosette Khawaja (cosette.khawaja@wip-munich.de)

For more information on SWEETFUEL exploitable results, please contact the respective SWEETFUEL partner indicated in the flyers, the SWEETFUEL coordinator Dr. Serge Braconnier from CIRAD (serge.braconnier@cirad.fr), or Dr. Rainer Janssen and Dominik Rutz from WIP (rainer.janssen@wip-munich.de, dominik.rutz@wip-munich.de).
SWEETFUEL Contacts

SWEETFUEL NEWS publications aim to provide recent information on activities and results of the SWEETFUEL project to interested stakeholders worldwide. In the framework of the SWEETFUEL project an associate partnership has been established to provide opportunities for cooperation and knowledge exchange with international stakeholders. Interested stakeholders are invited to join the SWEETFUEL partnership by signing an application form available at the website www.sweetfuel-project.eu.

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