The ACP Sugar Research Programme

To enhance the competitiveness of the sugar cane economy of the ACP group of countries

This programme of the ACP Group of states is funded by the EU and implemented by the consortium Sofreco – CERF - Harrewell
Introduction

• Introduction
  – Started in December 2010, End at the 31 December 2014
  – Five core partners
    • SIA/SIRI in Jamaica
    • WICSCBS in Barbados
    • TSSA in Swaziland
    • MSIRI in Mauritius
    • SRIF in Fiji
  – Other partners (14)
    • All centres of the ACP sugar producing countries
  – Last major event
    • The mid term workshop of the Programme in Mauritius, Oct 2012
Three main avenues investigated

- Promotion of new cane varieties
- Reduction of sugar cane cost of production and limitation of negative impacts on the environment
- Reduction of sugar losses from processing and promotion of value addition for cane by-products
Promotion of new cane varieties

• Project: Improving the capacity of sugar cane breeding in the Caribbean by investing in state-of-the-art laboratory equipment.

• Project: Establish an international quarantine facility, to exchange sugarcane germ-plasma among ACP countries.

• Project: A comparative study of family and individual mass selection methods as early selection criteria.

• Project: Nobilisation of Erianthus Species.
Reduction of sugar cane cost of production and limitation of negative impacts on the environment

- Project: Develop use of bio-pesticides, to control sugarcane white grub
- Project: Determine optimal amount of phosphorus use in sugarcane, to reduce production costs and protect fresh water resources in ACP countries
- Project: Increase sugarcane yields on outgrower smallholdings in Swaziland, by improving irrigation scheduling
- Project: Develop an information system for irrigation management, to make optimal use of water in sugarcane production
Reduction of sugar losses from processing and promotion of value addition for cane by-products

• Project: Develop an alternative method to determine dextran in intermediate sugar process produce, to improve quality and earnings.

• Project: Assist ACP sugar producer countries in making efficient use of energy resources in sugarcane processing, by providing consulting and training services.

• Project: Develop incineration technology, to dispose of vinasse

• Project: Develop cost effective technology, to produce bio plastics from sugarcane biomass.
The Outcomes after two years

• Infrastructures / equipments
  – High performances Analysers
    • Spectracane. No of analyses * 40 (~400 analyses per day) in Barbados, Jamaica, Belize, Guyana, Fiji (Mauritius in the future)
    • DASA system: Determination of dextrans levels. Quicker and cheaper analyses. In Jamaica, Guyana and Belize
    • DNA analysers
    • International quarantine facility in Mauritius
The Outcomes after two years

• Knowledge
  – Insects identifications throughout DNA analysis. (higher precision for the choice of biopesticides.)
  – Statistic system for family selection (breeding)
  – Crossing of Erianthus X Sugar Cane
  – Soil properties and behaviours under rainfall to alleviate erosion
  – Phosphorus monitoring and pollution control
The Outcomes after two years

• Capacity building
  – Training session on Energy management in sugar factories
  – Training session on irrigation management and dissemination of information on irrigation schedules using the SMS system.
  – Training session on molecular detection of sugar cane diseases
  – One young scientist awarded by the IPNI
The Outcomes after two years

• Capacity building
  • Support of attendees in the international scientific events in the sugar sector
    • ISSCT, Breeding, in Brazil May 2011, Pathology, in China in May 2012, Agronomy, in Australia, September 2012
    • IAPSIT, Congress, in India November 2011
    • ICE, Entomology, in South Korea, August 2012
    • SASTA, Entomology in South Africa, August 2012
  • Support of scientific missions
    • BIOFORSK (Norway) in October 2012
  • Support of workshop organisation
    • Soil identification in Fiji, September 2013
    • Erianthus breeding in Fiji, May 2013
Where to find information

• Information can be obtained (Academic papers; Updates; Projects; Opportunities):
  – on the web site: www.acp-srp.eu
  – With the Coordinating Unit: coord.unit@ACP-SRP.eu
  – With the core members of the programme
For the future

• The principle for an ‘ACP SR II’ is approved.
• All the ACP sugar producing countries are concerned.
• Funds will be requested from the EDF 11 called ‘Horizon 2020’
• Five main domains could be investigated:
  – Agronomy (crop improvement, crop management, harvesting costs,...)
  – Bio fuels (ethanol ‘second generation’)
  – Electricity from bagasse for the grid
  – Bio plastics, green cement, bio refinery (green chemistry)
  – Carbon credits
• All these actions will be in line with the concept of the ‘green economy’
• Partnerships between centres in ACP countries and Labs in Europe will be encouraged (co-training, publications, co-operation...
New R&D Programme

To be elaborated along four main avenues:

• **Enhanced production**
  – New varieties and new canes
  – Disease and pest control
  – Novel methods of bulking new cane germplasm

• **Sustainable production**
  – Soil management
  – Water management
  – Alleviation of climate change
  – Coping with environmental norms
New R&D Programme

• Improved Processes
  – Milling of new canes
  – Improving milling and refining processes
  – Managing integrated production system

• Value Addition
  – Use of total cane biomass
  – Second generation of products: cellulosic ethanol, gasification and torrefaction of bagasse
  – High value organic substances
  – Exploitation of other energy crops

All four avenues imply better management, capacity building, supply chain optimization, quality control, etc...
Next Steps: The obvious

• Build up on the achievements of the First ACP R & D programme and lessons learned
  • e.g. new hybrids, early canes, safe germplasm exchange, resource management, optimisation of energy use, environmental norms, sustainability
Next Steps : The obvious

- Elaboration of broad themes by ACP Sugar Research Committee
- Prioritisation of projects through discussions with ACP researchers and others
  - Preparations of outlines of research project proposals
  - Interaction with donor agencies for funding: EU, etc...
  - Taking advantage of Euro 7 billion under EU’s Seventh Framework Programme for Research to boost up innovation as per press release of 20 July 2011. Euro 265 million reserved for environmental research to address climate change, etc...
- Promote capacity building through provision or sponsorship of training in R&D work, sugar technology (raw and refining), laboratory operations and in any other relevant field
Next Steps: The less obvious

• Investigate possibilities of developing new, simple R&D facilities, particularly in Africa
  – This could involve participation / co-opting of qualified outsiders for specific projects

• Creation of regional centres for specific objectives:
  – biological control, disease diagnosis, co-product valorisation, bioenergy, biotechnology, sustainability, etc... (could be units within established centres)
Next Steps

GETTING ORGANIZED THROUGH NETWORKING

– International Consortium for Sugarcane Biotechnology - (ICSB)
– International Sugar Cane Biomass Utilization Consortium (ISBUC)
– Brazilian Consortium for Bagasse Gasification – BIOSYNGAS
Sugar cane provides sustainability through:

- Employment
- Net export earnings
- Avoidance of fossil fuel import
- Cheaper electricity
- Carbon sequestration
- Assignments for service industry
- Low pollution load
- Soil conservation
- Greenery for landscaping
- Broad land ownership
Conclusions

- The world will need more food (sugar)
- The world will need more clean renewable and sustainable energy (ethanol, electricity)
- The world will need a low carbon economy
Thank you

Sugar Cane biomass

Saccharose

Ethanol

Electricity

Bioplastics
Green Cement

Carbon Credits

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