

Rice Industrial City

Rice Residues Management

Rice Bran, Straw & Husk

BY:

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PhD Pharmacognosy and Medicinal Plants

***EX- Lecturer , Pharmacognosy and Medicinal Plants ,
Faculty of Pharmacy Cairo University (1985 – 1997)***

IT&M For Biopesticides , Managing Director

KEAP For Biofertilisers , Managing Director

Red Sea Marine Fortune



Sharm El Sheikh & Hurgada

Present views of the two cities



Rice byproducts VISION

Rice Bran, Straw , & Husk

Diamonds are buried and ignored in deserts and mountains for thousands of years....

Till picked up , polished and then they

glow forever

Egyptian Rice Residues could be these diamonds ... !!!!

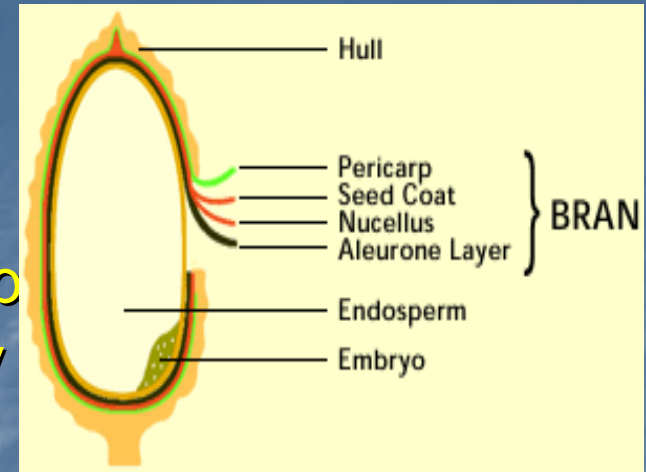
Rice Residues Current Projects

(Industry and Industry-Directed Research Program)

- A- Rice Bran
- B- Rice Straw
- C- Rice Husk

Rice Bran in EGYPT

- Total Rice Cultivated area in Egypt is about 2 Million Acres annually (About 8 MMT) giving more than 300 000 MT rice bran.



- However due to **non stabilization of Rice Bran** it is still discarded or used as animal feed despite its high content of bioactive substances

It is here where an untold wealth of vitamins, minerals and newly discovered disease fighting antioxidants are found as well as Nutraceuticals for alleviation of major illness symptoms (CVD, DM type II, elevated Cholesterol levels, Anti inflammatory & Hypertension).



IT&M - IMC R&D COOPERATION



- A) Rice Bran Stabilization (lab Scale)
- B) Rice bran Stabilization (Industrial Scale)
- C) Phytochemical and Nutritional study of the stabilized Rice bran.
- D) Implementations of the different rice bran products in food , pharmaceutical and cosmetic industries .

Action Costs : More than One Million Egyptian Pounds

Action Research Partners

- National Research Centre
- Faculty of Agriculture, Mansoura University



Research Development and Innovation Programme

RDI



Rice Bran Nutraceuticals (Negotiation Phase EURO 192000)

- ***Overall objective(s)***: Study of Stabilized Rice Bran from the pharmaceutical and therapeutic point of view.
- ***Specific objective***: Developing Rice Bran Nutraceuticals to be used in the prophylaxis and/or treatment of some common disease conditions.

Project Partners

- Faculty of Pharmacy Cairo University
- International trade and Marketing S.A.E
- German University in Cairo
- JOHANN WOLFGANG GOETHE
UNIVERSITÄT FRANKFURT am main
(GUF) , Faculty of Pharmacy
- VivaCell Biotechnology GmbH (Germany)

Rice Bran Wide Leader

Rice Bran Oil



South America producing a valuable in premium retail packaging options.

Stabilized Rice Bran



Animal Nutrition



Food Ingredients



Netherland's Leading Bakery Ingredient Companies

DSM Bakery Ingredients,

"Consumers are becoming more and more demanding with respect to foodstuffs. They quite rightly want food that is healthy, tasty and of good quality. Another criterion that is becoming increasingly important

DSM Bakery Ingredients, other producer nowadays, foodstuff producers, is at the store of DSM's strategy. Our innovation to retain their global market position in the past years, resulting in continuous market share growth. For them it is particularly important to make effective investments in R&D. The quality of the ingredients (such as flavor, texture, nutritional value and shelf life) and the efficiency of their production. Bakery Supplies explained Fokke Sijsma, member of DSM's Managing Board.

Rice Straw A Curse Or Blessing !!!!





The Problem





A Solution



Africa Gold Winner 2005





Research Development and Innovation Programme

RDI



- **Grant contract title**

Innovative, Environmental and Economic Rice Waste Management (Composite material and active carbon made from rice straw and husk)

- **Contract Reference Number**

MED/ 2008/169-031

- **Total cost of the action**

EURO 144700

- **Project Duration**

20months

1.5.2009 – 31.12.2010

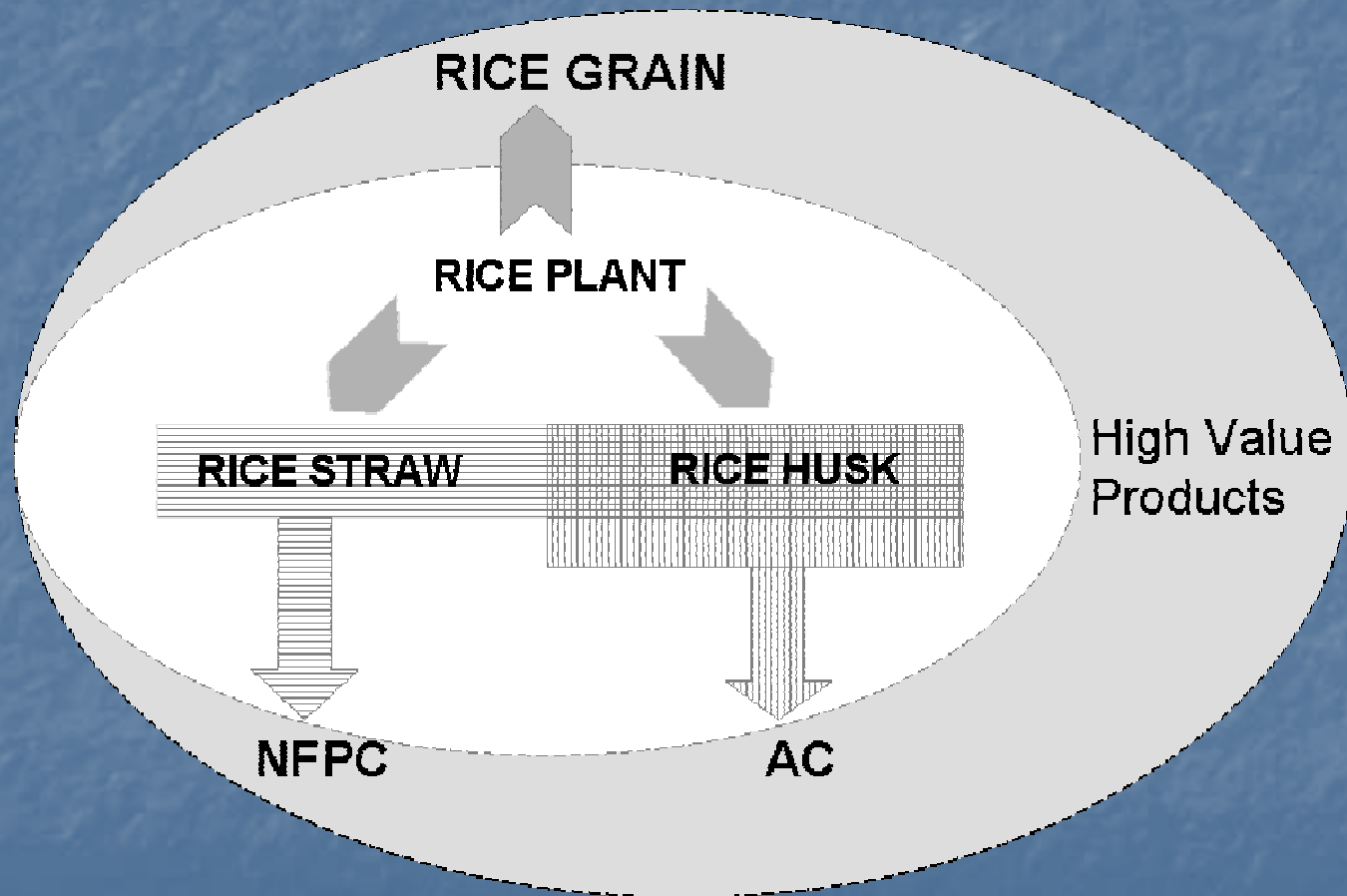
PROJECT PARTNERS

- **National Research Centre (NRC)** Cairo (Egypt)
Dr. Hosny El Sayed and Dr. Altaf Basta
- **Lab. de Chimie du Solide Minéral (LCSM)**
Université Henri Poincaré Nancy, France
Dr. Alain Celzard and Dr. Vanessa Fierro
- **Institute of Polymer Technologies e.V. (IPT)**
Wismar (Germany) *Prof. Dr. Hansmann and
Dr. Hans Korte*

MAIN ACTIVITIES

- Invention recipes and manufacturing processes for NFPC derived from RS and RH
- Conversion of RH into AC with good adsorption performances
- Enhancing the environmentally utilization of undesirable lignocellulosic wastes

RICE HUSK AND RICE STRAW PROPOSED INNOVATIVE UTILIZATION



Future of Active Carbon In Egypt



- Water Treatment Companies use up to 2000 Tons/year

- Sugar Processing Factories use up to 2000 Tons/year

- The two most widely used products in both applications are:
Aquasorb1000 & Aquasorb2000

- The specs for them are available

- Technology for recharging Activated Carbon
- Industrial Gas Waste Management
- Providing odorless & colorless kerosene for Paint Industries

Active Carbon Production from Agriculture Residue



Natural Fiber Plastic Composite

Automotive Industry:



Consumer Products:



Building Materials:



Decking & Fencing:



NFPC sequence and links

**Identifying the consumption and possible markets for NFPC
RS and RHs Chemical and Physical analysis and Milling to the desired
particle size**

(KEAP)

**Studying compatibility of lignocellulosic fibers with polymers
Studies on producing fiber polymer composites (NFPC).**

(IPT & NRC)

**Setting a pilot unit for NFPC and laboratory molds preparation
Production of NFPC from Different invented recipe**

(KEAP & IPT)

NFPC SEQUENCE AND LINKS 2

Studies on testing of produced NFPC for special applications

Characterization and Profiling of produced NFPC

(IPT & NRC)

Application for Patents

Registration at the authority

Marketing of the Project Products

(KEAP)

Active Carbons sequence and links

Identifying the consumption and possible markets for AC

RS and RHs Chemical and Physical analysis and Milling to the desired particle size

(KEAP, NRC)

Studies the physical and chemical pre-treatments on rice straw and husk to increase its accessibility to produce active carbon (AC).

(KEAP, NRC, LCSM)

Setting a pilot unit for ACs and Production of ACs from RHs

(KEAP)

AC SEQUENCE AND LINKS 2

Studies on producing AC on different forms, e.g., powder, granules and monolithic forms.

Studies the physical properties of the produced (AC), e.g., gas adsorption, small angle X-ray scattering, evolved hydrogen analysis, and electron microscope, as well as, evaluation towards its uses in water & air purification.

(NRC and LCSM)

Application for Patents

Registration at the authority

Marketing of the Project Products

(KEAP)

ESTIMATED RESULTS

- Recipes for NFPC based on RS and RH
- Tested Products (demo) made from RS/
RH and NFPC
- AC derived from RH
- Development of different ACs products

Thanks for Listening and
Wish all the success for all of You
And Wish after three to four Years
EGYPT starts to turn
Rice bi products into **GOLD MINES**

Amr Helal
9.6.2009