New technologies for break-through in yields & by-product utilization in Africa

Keshav Kranthi
Head, Technical Information Section
International Cotton Advisory Committee
50 yrs - Global v/s Africa Lint Yields Kg/ha
Average Yields in Rainfed
Australia, USA, Turkey and China: 800 Kg/ha
Brazil: 1650 Kg/ha

Requirements to get 1000 Kg lint

45 Kg Nitrogen-N
12 Kg Potash-N
15 Kg Phosphorus-P
267 mm water (Rain)
A specific agronomy for high yields
YIELDS 3 SECRETS
Plant Architecture + Canopy Management

India & Africa Bushy

Advanced
High Density Planting
Australia, Brazil, Mexico, USA, China & Turkey

Low Density Planting
India & Africa

>110,000 Plants/Ha

<20000 plants /ha
Short duration
High efficiency & Less biomass
High Yields & good fibre quality

Long duration (>210 days)
less efficient & Wasteful biomass
Low Yields & mixed fibre quality
Relevance to By-Products

Thinner stalks + Good seed
BY-PRODUCTS

3 New Exciting Technologies
Ultra-Low-Gossypol-Seed

Dr Kirthi Rathore, Texas A&M 2006

Engineering cottonseed for use in human nutrition by tissue-specific reduction of toxic gossypol

Ganesan Sunil Kumar*, LeAnne M. Campbell†, Lorraine Puckhaber*, Robert D. Stipanovic‡, and K eer† S. Rathore‡‡

*Institute for Plant Genomics and Biotechnology and †Department of Soil and Crop Sciences, Texas A&M University, College Station, TX 77843, and ‡U.S. Department of Agriculture-Agricultural Research Station, Southern Plains Agricultural Research Center, College Station, TX 77845

99% GOSSYPOL REDUCTION
The cottonseed from these plants meet World Health Organization and FDA standards.

On 16th Oct 2018, the APHIS –USDA deregulated the Genetically Engineered Ultra-Low-Gossypol-Seed Variety ‘TAM66274’ of Texas A&M University.

10 million tonnes of protein annually from the cotton seeds Can fulfill protein nutrition of 50g/day for 600 million persons for one year

-Thomas Wedegaertnera & Keerti Rathore, 2015
GOSSYPOL REMOVAL

Molecular Imprinted Polymers

Keke Zhi, et al., 2018, Material, 11,777

30g Silica
Removes 6g Gossypol in 100Kg Oil in 10min

Figure 1. Synthetic route of gossypol-MIPs by combining sol-gel strategy and surface imprinting technique.
BIOCHAR

• SOIL REMEDIATION
• ORGANIC CARBON
• SOIL TEXTURE

Cotton stalks yielded the highest Biochar

Thank you

Any Questions?

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