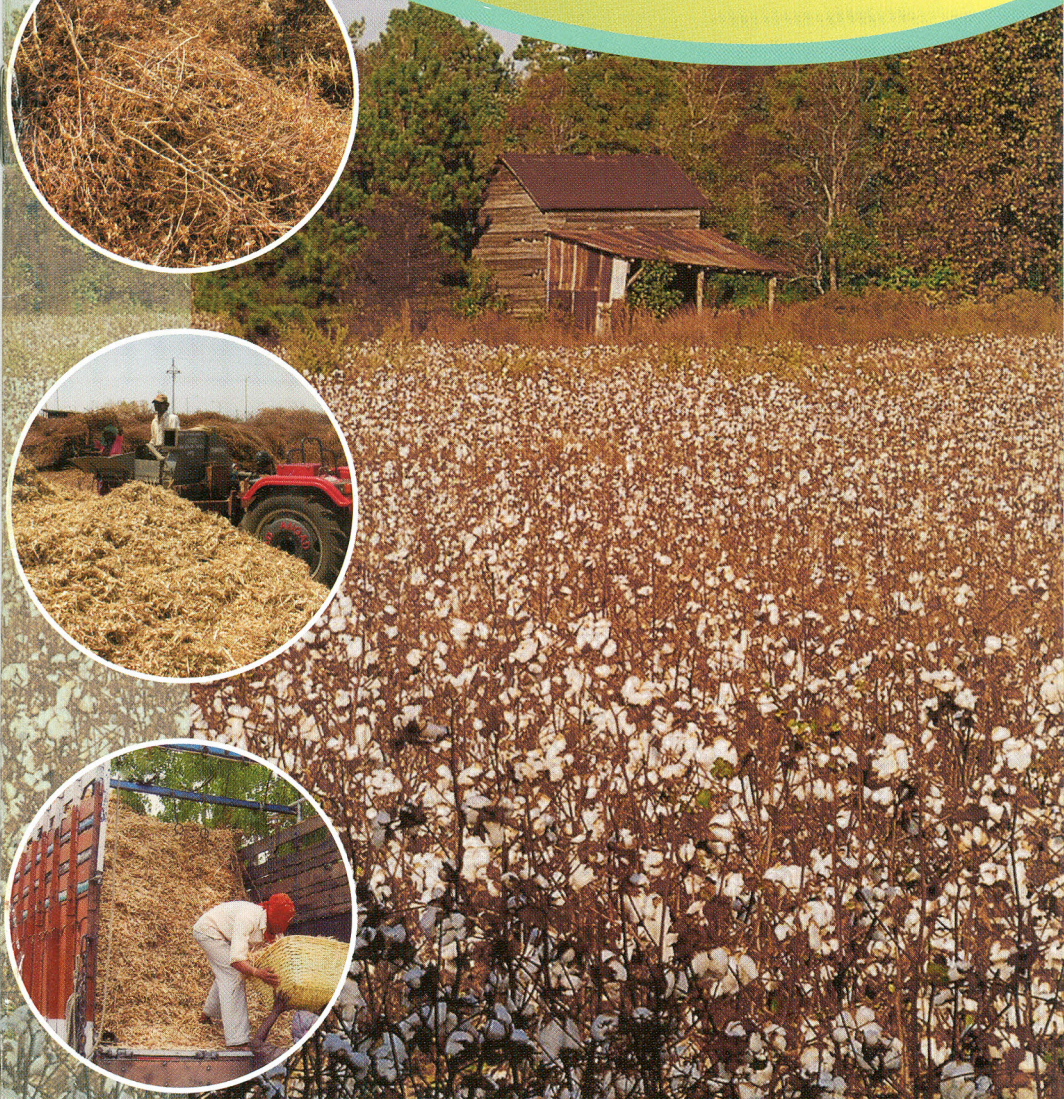


CIRCOT Leaflet No. 62

Cotton Stalk: An Additional Raw Material to Board Industry



**Central Institute for Research on Cotton Technology
(Indian Council of Agricultural Research)
Adenwala Road, Matunga, Mumbai-400019**

In India, during 2008-09, the area under cultivation for cotton was about 9.4 M ha and the lint yield is estimated to be about 290 lakh bales. It has been estimated that on an average annually about 25 million tonnes of cotton stalks are generated. The chemical composition of cotton stalk is akin to hard wood and is a good renewable source of raw material for the board industries.

CIRCOT started working on this raw material way back in 1975 and standardised many technologies for production of pulp and paper, particle boards, hard boards, as a substrate for growing edible oyster mushrooms, etc. A number of industrial trials also were undertaken and proved beyond doubt that cotton stalks is also one among the most suitable raw material for manufacturing pulp and paper, composite

boards and as a good substrate for raising edible mushroom crop.

Why board industries are not inclined to use cotton stalk as a raw material?



- ✓ Bagasse, a byproduct from sugarcane crushing industries is available from an organised sector.
- ✓ Assured supply of bagasse at an affordable price
- ✓ Available in a bale form and large quantities can be transported and stored in a pyramidal structure
- ✓ Cotton stalk is not removed from the field immediately after harvest of seed cotton particularly in central and southern parts of India whereas in Haryana and Punjab, they are cut at the ground level and transported in green stage to a centralised chipping centre, chipped immediately and used to bake bricks
- ✓ In Gujarat, they are removed and burnt in the field
- ✓ Only 25% of the stalks are used as fuel by the rural mass
- ✓ Absence of an established cotton stalk supply chain makes procurement difficult for board industry

In order to address these issues, CIRCOT approached CFC, Netherlands through ICAC, Washington, USA and a project was sanctioned in 2004 mainly to address the issue of establishing a cotton stalk supply chain apart from supporting and installation of a 1 TPD demonstration plant at CIRCOT's Regional Unit at Nagpur.

The following models were tried for the purpose of establishing a supply chain

- ❖ Transportation of cotton stalks directly from the field to the factory
- ❖ Transportation of chips from the field to the factory
- ❖ Transportation of cotton stalks from the field to a centralised chipping centre and transportation of chips to the factory

Model 1

Transportation of cotton stalks directly from the field to factory

Mode of Transport	Cotton Stalk carrying capacity (Kg)
Bullock Cart	325
Tractor Trolley	575
Lorry	1500

Advantage : No need of a pre-processing centre at village level

Limitations : Less carrying Capacity.

: Not economically viable.



Model 2

Chipping of cotton stalks by farmers and transportation to the factory

Advantage : Load carrying capacity enhanced by 4 times

Limitations : Purchase of cotton stalk chipper - not affordable for an individual farmer
Shortage of electrical power in rural areas/non availability of appropriate power source for chipper in and around farm



Model 3

Collection and transportation of cotton stalks by farmers from the field to the chipping centre. Chipping and subsequent transportation to the factory by an entrepreneur

Advantages : It is easy for farmer to collect and transport cotton stalk to the nearest chipping centre.

Entrepreneur can purchase tractor operated chipper, as sufficient quantity of cotton stalks at one place is assured

Timely and assured supply of cotton stalk chips to the Board Industry



Model 3 appears to be economically viable

Model 3 has been found to be viable and accordingly an NGO was identified and the work was entrusted. The expenditure towards collection, chipping and transportation is given below.

Expenses Incurred by NGO

Particulars	Rs. per tonne
Tractor Driver	90.00
Diesel Charge	100.00
Supervision	60.00
Miscellaneous	30.00
NGO's charges (collection, cleaning, chipping and transportation to a distance of 50 km inclusive of a payment of Rs. 500/ per tonne towards biomass)	1700.00
Total	1980.00

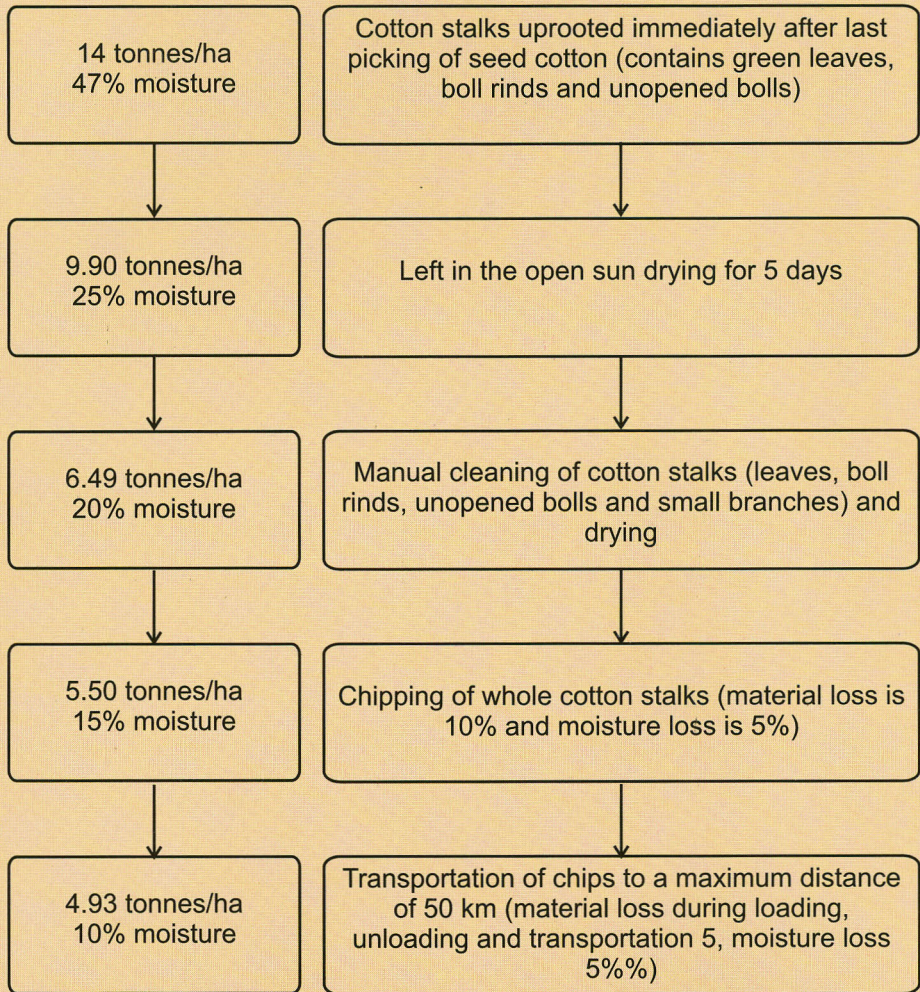
It has been observed that when the entire operation was carried out by an NGO around 2-3 Km distance with chipping centre in a board industry, the total cost per tonne of ready to use chips was about Rs. 1200/-

Based on the experience over the years, the following conclusions have been drawn.

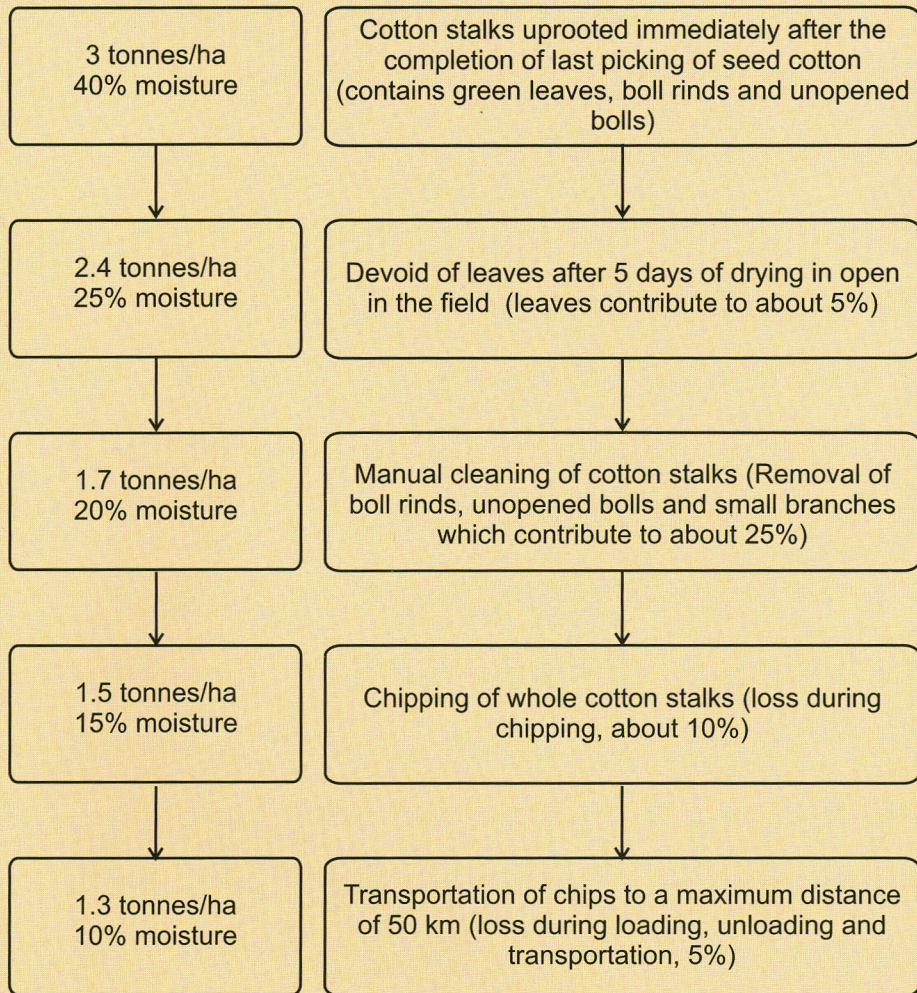
- Farmers can get additional income for their cotton stalks
- Ready to use cotton stalk chips can be supplied to the existing board industries
- 10-20 TPD plants can be started by prospective entrepreneurs in cotton growing areas



Availability of Cotton Stalks in Sirsa District, Haryana, India



Availability of Cotton Stalks in Nagpur District, Maharashtra, Nagpur, India





For further details contact

**Director,
Central Institute for Research on Cotton
Technology**

(Indian Council of Agricultural Research)
Adenwala Road, Matunga, Mumbai-400019, India.

Phone : 022-24127273/76, 24157238, 24184274/75

Fax : 022-24130835, 24157239

E-mail : circot@vsnl.com

Website : <http://circot.res.in>