

## Wood substitutes

T. N. Khoshoo<sup>1</sup> reported the necessity of covering 33% of land under forest since Nehruvian times although the mission has not yet been achieved. Rather the trend shows a steady decline, leading India into a wood-deficit and wood-importing nation.

Jute fibre in the form of jute caddies, root cuttings, jute feshwa, jute thread, etc. contain high percentage of cellulose and as such these jute wastes can amply be employed for manufacture of different grades of paper such as wrapping paper, sack paper, paper board as well as writing and printing paper. The new uses of these jute wastes can widen<sup>2</sup> the conventional uses of jute fibre that is now challenged by synthetic fibre. It is now hoped that the export market which has gradually been declined can now be upgraded by such means.

The conventional paper-making raw materials, wood and bamboo, are presently short in supply due to an increasing demand for these raw materials and due to steep resistance against deforestation. Jute wastes are mostly favoured as raw materials, the researchers at the Jute Technological Research Laboratory say, because these are soft on the one hand and contain lesser lignin content for the fact of which pulp making can be made

Table 1. Chemical compositions of jute-based raw materials

Raw material	Chemical composition			
	Alpha cellulose (%)	Hemicellulose (%)	Lignin (%)	Ash (%)
Jute stick	40.8	31.9	23.5	0.8
Jute root cuttings	60.0	25.0	11.0	1.16
Jute feshwa	60.0	25.0	11.0	1.16
Jute caddies	57.0	22.0	13.0	1.1

with consumption of lesser quantities of chemicals and energy. As such, these jute wastes can be cost-effective cheaper raw materials. Moreover, yield of pulp is found to be higher compared to that prepared from conventional raw materials. The strength of the pulp is also found satisfactory.

Chemical analysis (Table 1) of jute stick showed 40.8% of hemicellulose, 23.5% lignin whereas jute root cuttings contain 60% alpha-cellulose, 25% hemicellulose and 11% lignin. Percentages of alpha-cellulose, hemicellulose and lignin in jute feshwa correspond to the same quantities as those of jute root cuttings. But jute caddies contain 57.0% alpha-cellulose, 22% hemicellulose and 13% lignin.

These characteristics of various jute-

based raw materials made the waste highly useful particularly as a substitute of wood and bamboo for making paper. Besides, the additional advantages a generation of rural employment and extra income for the jute growers.

1. Khoshoo, T. N., *Curr. Sci.*, 1996, 70, 20-214.

2. Pandey, S. N., Ghosh, I. N. and Day, A. *Res. Ind.*, 1995, 40, 285-288.

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## NEWS

### The computer as a laboratory notebook

The computer culture has invaded the laboratory. The advantages of a computer as an aid to science is very obvious. However some disadvantages have been pointed out in an article in *The Sciences* (1995, 75, 10).

Most scientific institutions (at least the old-fashioned ones) used to insist that the laboratory notes and records of a scientist be entered daily into a bound volume with numbered pages. This is to have 'a complete, continuous and contemporaneous' record of the research worker's activity and hence that of the laboratory. Since sheets cannot be inserted or removed, the note book can be taken

to be credible evidence whenever necessary. Most importantly, if one reads the records after a passage of time important patterns missed earlier may appear.

Some laboratories follow the convention that the head of the laboratory sees and signs these records frequently. The old dictum is useful when disputes about priorities and patents arise.

There are moves to introduce the computer to keep daily laboratory records also. Such a record, needless to say, is not like a bound volume but more like a loose leaf note book. It is said that the computer as a writing instrument is not so much a better pencil than an

eraser. The computer is of great help introducing new entries and moving around or erasing existing entries of laboratory records. A dip into the above article gives many valuable hints as how a scientist can be dishonest and get away with it. But then there are ingenious solutions like stamping devices etc., prevent tampering with the entered records—and there are more ingenious devices for breaking the code.

It seems easier for a scientist to be honest.

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