PAPER PULP FROM ANNUAL CROPS

Part II. A Note on the Yields and Characteristics of Pulps from Different Varieties of Rice Straw.

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In continuation of work described in Part I[1] large quantities of straw available locally in the market were treated for the production of paper pulp. It was noticed that the yield and the quality of the pulp obtained was poor and hence there was indication that the quality of straw varies considerably in regard to the production of paper pulp. This may explain the observations of certain workers that rice straw is not quite suitable for paper manufacture.[2] They might have been dealing with straw of very poor quality. Table I gives a comparison of the local sample (A) now examined by boiling with 3% alkali solution for 3 hours at 130°, with the composite sample obtained from Samalkota (B) and already described in Part I.

Table I

Treatment NaOH % on straw	Yield of unbleached pulp on straw %		Yield of bleached pulp on straw %		α-cellulose in pulp %		Consumption of available Cl_2 on pulp %	
	A	B	A	B	A	B	A	B
30	32·0	41·5	29·6	38·2	80·0	80·0	4·7	4·5
22	33·0	43·5	30·8	41·5	76·0	77·7	4·9	4·7
15	35·0	46·5	31·4	44·0	76·8	77·1	6·0	5·9
Double boiled	33·5	44·0	31·8	42·0	72·2	77·6	4·0	3·6

From the above table it is clear that the yields of pulp under various treatments are uniformly and considerably lower in sample (A) as compared with sample (B). Though the characteristics of the pulps from the two samples are similar as far as the cellulose content and bleach consumption are concerned, the pulp from (A) could not be bleached to

standard whiteness. Consequently work has now been undertaken to examine straw from the most important varieties of rice grown in the Godavari and Kistna deltas. They were obtained from the Agricultural research station, Samalkota, and they were the components of the composite sample (B). Table II embodies the results relating to the chemical composition of different varieties of rice straw. They were the average of duplicates which were found to be closely agreeing.

TABLE II

Name of the variety	Moisture %	Lignin %	Pentosans %	C & B cellulose %
Punasakonamani ..	12·2	25·0	21·7	39·3
Punasa Akkullu ..	11·8	31·2	22·9	37·4
Konamani ..	12·1	28·2	19·8	41·2
G. E. B. 24 straw ..	12·0	31·8	23·7	36·4
Composite sample (B) ..	12·0–12·2	25·0–28	20–22·0	37·5–38·2
Local sample (A) ..	12·5	25·2	26·1	28·8–30·0

Though small differences exist in varieties grown under the same conditions of soil and cultivation more marked changes seem to be brought about by variations in the soil and cultivation.

It has been already pointed out in regard to work on the composite sample (B) that the characteristics of the pulp depend on the treatment adopted. Similar results were obtained regarding the sample (A) also. The experimental methods employed are the same as those given in Part I.

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REFERENCES

1. P. B. R. Murti and T. R. Seshadri .. *Proc. Ind. Acad. Sci.*, 1940, **12**, 519.
2. K. Akagi .. *J. Cellulose Inst. Tokyo.*, 1939, **15**, 59–60.