Eco-friendly retting of jute - The future ahead

Jute is an environment friendly crop producing vegetable fibres for a number of commercial uses. Retting of jute (*Corchorus spp.*) is the most important biochemical process for the production of 'golden fibre'. Under conventional retting slow moving soft water is essentially required for quality fibre production; in absence of that farmers ret their jute repeatedly in the same stagnant water of natural tank, road side ditches, etc. culminating in poor quality fibre generally not suitable for high valued diversified products (Pic. 1). Further, quick conversion of aerobic to complete anaerobic condition under conventional retting facilitates the growth of several pathogenic microbes, water borne insects, etc., resulting in unhealthy environmental condition.

Under this situation, the talc based microbial formulation 'CRIJAF SONA' developed by CRIJAF consisting of three different strains of *Bacillus pumilus* proved to be effective for jute and mesta (*Hibiscus spp.*) retting in stagnant but limited amount of water under varied agro-climatic situations in different states of India. These strains of *Bacillus pumilus* are very good pectin and xylan degraders without any cellulolytic activity, spore forming but non-pathogenic. In water scarce situation retting can be carried out in natural retting tank, polythene lined or concrete tank in shorter duration by using this microbial formulation for each layer of jak during the process of retting. Thirty kg of formulation is needed for retting of jute plants from 1 ha costing Rs. 900 only. Besides reduction in retting duration by 6 to 7 days, the quality of fibre is also improved by at least 1 to 2 grade (Pic. 2), and farmers can earn an additional income of Rs. 6000 to 9000 per ha over conventional method of retting (Table 2) confirmed from trials conducted in farmers' fields. The environmental condition causing skin related problems and fowl odour under conventional method is also substantially improved.

In conclusion, there is still scope for further improvement of the technology if the retting through microbial formulation is done on fibre strips by extracting the same following mechanical means instead of doing on whole plants described above.

Pic. 1. Conventional method of retting and resultant black coloured fibre

Pic. 2. Improved retting with microbial formulation and the resultant golden fibre

Table 2. Effect of microbial formulation on retting duration and fibre strength of jute

District & State	No. of demonstrations	Retting duration (days)		Enhanced fibre strength (g tex^{-1}) with microbial formulation
		With microbial formulation	Without microbial formulation	
Hooghly, West Bengal	44	9-14 (11.6)*	15-19 (18.2)	23.1-30.1 (26.2)
North 24 Parganas, West Bengal	79	10-17 (13.4)	17-21 (19.5)	23.9-28.8 (25.2)
Nadia, West Bengal	57	11-19 (14.6)	21-23 (22)	23.3-31.6 (25.7)
Murshidabad, West Bengal	05	13-14 (13.6)	16-21 (18.6)	24.0-29.0 (25.4)
Malda, West Bengal	20	12-14 (12.7)	17-22 (19.5)	23.5-26.1 (24.6)
Baharaich, Uttar Pradesh	15	09-11(9.2)	15-17 (16.3)	23.5- 30.8 (25.8)
Srikakulam, Andhra Pradesh	60	13-15 (13.6)	22-25 (23.8)	-

*Data in parenthesis indicate the mean value

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Snippet

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- refined wet phosphate acid technique
- low-temperature thermal recovery technique in the production of sulfuric acid
- deep hydrolyzing technique of waste urea liquid, & high-tower compound fertilizer dehumidifying technique.

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