

SUGGESTIONS FOR PRESERVATION OF FISHING NETS

By

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There are many causes which contribute to the weakening of vegetable fibres of fishing nets and ropes and they are fatigue by repeated load and shocks, abrasion due to continuous friction, sun light, fish slime and other physical and chemical effects. But, rotting due to the action of the cellulose eating bacteria is by far the most serious cause of damage to nets and ropes, particularly in tropical and sub-tropical regions with relatively high temperature and humidity. *Obviously, the best way to protect nets from rotting is to keep them always dry and store them in a cool environment with low humidity.* This may not always be practical. Preservation of the fibres against rotting therefore becomes necessary.

Experiments on preservation have been initiated at this Station and the findings of each will be published in the appropriate journals. The purpose of the present communication is to suggest a method of net preservation based on the deductions of experiments so far conducted.

Course of rotting of cotton and sun hemp twine

The course of rotting of untreated Cotton and Sun Hemp twines under continuous immersion in Cochin backwaters is indicated below :

Cotton No. 32, 3 ply, 18 threads (Original breaking strength 8.1 kgms)

No. of days immersed	1	2	5	7	9	12	14	16	18
Percentage breaking strength to the number of days immersed.	100	98	77	59	46	20	6	2.5	0

Sun hemp twine No. 31, 7 threads (Original breaking strength 25.1 kgms)

No. of days immersed	1	3	6	9	12	15	20	26
Percentage breaking strength to the number of days immersed.	100	91	53	23	15	6	1.6	0

It would be evident from the tables given above that within a few days of continuous immersion, twines lose their original breaking strength. This further substantiates the fact that untreated cotton and sun hemp nets and ropes never remain in water or in wet condition without considerable loss to its original breaking strength.

Suitability of tannin as a preservative

Cutch, Kalasam bark (*Odina wodier*), Panichikka (*Diospyros embryopterius*), Tamarind seed, myrobalan nut (*Terminalia sp.*), etc. whose main components is Tannin are some of the most popular preservatives used in India. It is well known that Tannin in itself is a poor preservative for nets and ropes. This fact is further evidenced in the tables given below :

Cotton twine No. 32, 3 ply, 18 threads

No. of days immersed	Percentage breaking strength of twines treated with preservatives*				
	Kalasam	Myrobalan nut	Panichikka	Cutch A	Cutch B
0	114	119	120	99	98
7	70	1.5	117	81	69
12	10	0	13	—	—
14	—	—	—	6.5	9.7
17	0	—	2	—	—
20	—	—	0	0	0

*Original breakings strength of untreated twine has been taken as 100%.

Sun hemp twines

No. of days immersed	Percentage breaking strength of twines treated with preservatives		
	Cutch	Kalasang bark	Panichikka
0	100	100	100
3	87	117	94
6	59	—	—
9	44	30	46
12	22	—	—
14	—	11	23
15	13	—	—

Tannin is easily soluble in water. Nets and ropes tanned, if exposed to water or kept wet even for a short period, the tannin dissolves away leaving only traces of the preservative. If, however, tannin can be fixed to vegetable fibres particularly cotton, its preservative qualities can be greatly improved. Fixing of tannin to the fibres can be accomplished by a process of oxidation. If tanning and dyeing are repeated many times, a certain percentage of the preservative is oxidized and adhere to the fibres. To accelerate this process, oxidising agents like Copper Sulphate or Pottassium bichromate are often used with beneficial results. But salts like copper sulphate have certain deleterious effects on the fibres if not used in the right way and in correct proportions.

Tannin with Coal tar

While certain workers (Firth and Carlson 1949) recommend coal tar as a simple and effective means of preservation for heavy nets, others (Whiteleather and Brown 1945) consider that coal tar should be avoided particularly in the tropics. In the experiments conducted at Cochin, although the commercial chemical preservatives like garnol, cuprionls etc., were found somewhat effective in their preservative qualities tannin mixed with coal tar was found to be most effective for preservation of cotton twines. A comparative statement of the life of cotton twines treated with coal tar mixed with indigenous preservatives is given in table below:

Cotton twine No. 32, 3 ply, 18 threads

No. of days immersed	Percentage breaking strength				
	Coal Tar	Myrobalan nut +C.T.	Panichikka +C.T.	Kalasang +C.T.	Cutch +C.T.
0	104	91	89	86	79
14	50	76	88	81	87
24	—	—	—	84	85
28	42	57	94	—	—
36	41	57	98	90	90
50	17	20	92	81	lost
63	—	—	—	70	—

While the twines treated exclusively with coal tar did show a progressive decrease in its breaking strength during continuous immersion in water, those treated with Panichikka plus coal tar, Kalasam plus coal tar and Cutch plus coal tar keep their original breaking strength for nearly 36 days.

The following table will give the utility of the different preservatives on sun hemp twine :

Sun hemp twine No. 31, 6 ply or 7 ply
(Original Breaking Strength of each treated twine was taken as 100%).

No. of days immersed	Percentage Breaking Strength of sun hemp twine treated with preservatives						
	Net green	life Cuninine	Cutch +C.T.	Kalasam +C.T.	Coal tar	St. green cuprin.	
0	100	100	100	100	100	100	
9	102	119	109	89	88	74	
17	69	96	81	73	44	56	
27	38	38	44	58	20	27	
37	19	10	18	41	7	32	
47	20	11	17	34	0	20	

Method of preservation recommended

Prepare a solution of tannin and dye the net following the usual method of treatment. The net is then dried and treated with coal tar mixed with 30% of kerosene. Dry the net in shade.

The above described method will be very useful for trawl net, Stake net and other types of gear which are immersed in water or kept wet for a long time. This method or preservation, is, however, not suitable for gill nets, cast net etc. as the weight of the treated twines increase considerably and the twines also become stiff.

Although the method described is not as effective on sun hemp as on cotton, it is definitely superior to the treatment of sun hemp by chemical preservatives.

REFERENCES

1. Firth, Frank E., and Carlson, Carl B., 1949 "Preservation and Care of Fish nets" Fishery Leaflet 66. U. S. Deptt. of the Interior.
2. Whiteleather, Richard T., and Brown, Herbert H., 1945 "An experimental Fishery survey in Trinidad, Tobago and British Guiana with recommended improvements in Methods and Gear". Rept. of Anglo American Caribbean Comp. pp. 104-105.