STABILITY OF KNOT PRESERVED BY LATEX AND RUI

(Stabilitas Simpul yang Diawetkan dengan Lateks dan Rui)

By

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ABSTRACT

This study tried to determine effect of rui and lateks solvent ro stability of polyamide (PA) and polyethylene (PE) knot. Result shows that rui reduced 60 % stability of PA knot and 46% of PE knor, while lateks reduced 43 % stability of PA knot and 50 % of PE knot.

Key words: Latex, rui, stability of knot, polyethylene, and polyamide.

1. INTRODUCTION

1.1. Background

A kind of net that has been use to forming fishing gear at the beginning is made from natural fiber, vegetable fiber or even animal fiber. Examples of vegetable fiber are cotton, *manila*, *sisal*, *hemp*, *linen* and ramie. It so animal fibers among others are silk and wool. From both kind of fiber, its vegetable fiber that mostly use, because cheaper and easily to get.

Net main weaknesess that made from vegetable fiber is easy to rotten. so it's not imperishable to use. Effort that works to handle it is by preserved. Its purpose to hampered rottening process, so tools use period will much longer. Besides that, also to colouring and adding breaking strenght.

Net invention that made from sintetic fiber cause vegetable fiber is no longer use. Almost entire part of fishing gear – especially net pan – made from sintetic fiber. Although without preserved, this kinds of net has a lot of superiority compare with natural fiber net, like stronger, long life, and flexible.

Preserved on net that made from sintetic fiber actually already unnecessarly needed. But in the reality this effort still many worked by fisherman. For example is Palabuhanratu fisherman that preserved *payang* fishing gear – stacked up on net that made from *polyethylene* (PE) fiber and *polyamide* (PA) net yarn -- with lateks and rui.

Effect of preserved with lateks and rui to PE and PA net yam already works by Mahaputra (2004). Its result that preserved on PE yarn not causing any changes on it's breaking strenght. This is different with PA breaking strenght that becomes higher,

especially if preserved with lateks. Drawning sped of PA yam also becomes higher after preserved.

Yarn and knot is a unity that forming net. Preserved impact will cause on nor only yarn breaking strenght, but also to net's knot stability. In previously research preserved effect on knot has not done yet. Therefore, in this research will be observed preserved effect on net's knot stability. It so net that been use is made from *polyamide* (PA) and *polyethylene* (PE) yarn. In this research does nor discuss problems about different stability between the two kinds of net.

Scientist publication that discussing problems of preserved impact on breaking strenght of net yam, a lot are found, like Shimozaki (1959). Sari (1995), Prajudi (1983), and Syahailatua (1985). It so happends book (literature) that content research about stability after preserved is has not been found. Although like that, literatures above still use as reference in discussing this research result.

1.2. Research Purpose

This research is purpose to determine how much the rui and lateks preserved effect to *polyamide* (PA) and *polyethylene* (PE) knot stability.

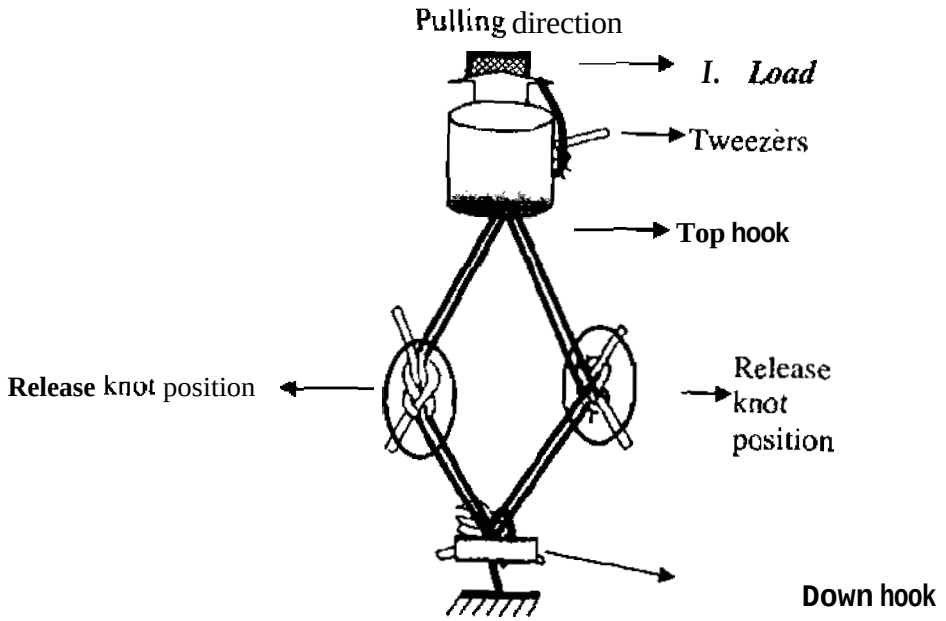
2. METHODOLOGY

Research is works in laboratorium by using experimental method. Material that tested is net that made from *polyamide* (PA) yarn 6,6 No. 210 D/9 and *polyethylene* (PE) No. 380 D/9. Knot stability measure by using breaking strength tester. Picture 1 shows form and knot position when pulling.

Before its pull, net is soak inside preserved like lateks and rui along 7, 14, 21, 28, 35, 42, 49, 56, 63, and 70 days. Net mesh amount for every preserved period and kinds of preserved is 40 pieces. Preserved period that alternaly 7 days is means so preserved realy able to enter inside cavity between yarn fibers and cavity in knot. As control, so before the research is works firstly do pulling on PA and PE net mesh that not preserved. Pulling amount on every kinds of yam is 40 times. It result is on an average and making as knot control stability value. Sequencer in stability experiment in this research arc:

1). PA net is soaks inside rui preserved;
2). After 1 days soaking, 40 net mesh pick up and drain up;
3). Net mesh pulls to the net length direction;
41. Data that list on breaking strength tester in cause of knot released is record;
5). Experiment continued for next preserved period; and
6). The same experiment also done for PA yarn with lateks preserved and PE yarn with mi and lateks preserved.

Entire data that gets in the beginning will be analize statistically. But because statistic design that desire is does not found, so those ways of countable is can not be done. As replace, data present in form of graph and analize in descriptive.



Picture 1. Form and position of net mesh when pulling

3. RESULT AND DISCUSION

3.1. *Polyamide* (PA) Knot Stability

a. Preserved result by using rui

Pulling on 40 net mesh PA control resulting release knot percentage of PA control as big as 57.5 % (23 pieces). Next after its preserved using rui, PA knot percentage which release is increasing average as big as 84.75 % (Picture 2). As many as 339 knots. when pulling 400 net mesh. Or, around 34 knots release every pulling of 40 net So increasing of preserved period is causing knot amount that release bigger.

In Picture 3 shows PA knot stability by using rui as long 7, 14, 21, 28, 35, 42, 49, 56, 63, and 70 days. Soaking time added causing knot stability decrease. Its shown by its regression equation, which F_{rui}=-0.0103 t + 3.3005. Slope value of those line equation is negative (-0.0103). Small slope value of regression equation causes that line very low and nor very clear.

of regression line equation on Picture 3 in guessing observation value shown its determination value as big as 52.6 %. Its mean, as many as 52.6 % of breaking

strenght observation value is on regression line. That determination value can be said small, so a lot of observation data can not be explain.

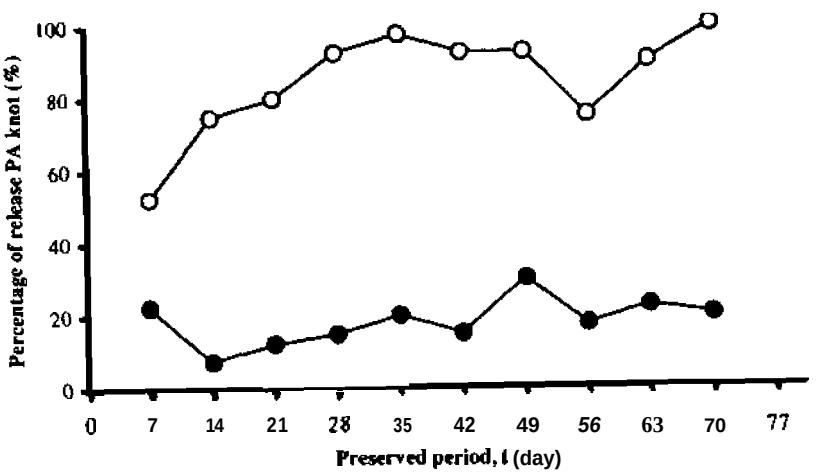
If its notice on Picture 3, PA knot that preserved with rui in every period of preserved has lower stability value compare with yam stability of PA control. Preserved with rui is give negative influence to PA knot stability.

b. Preserved result by using lateks

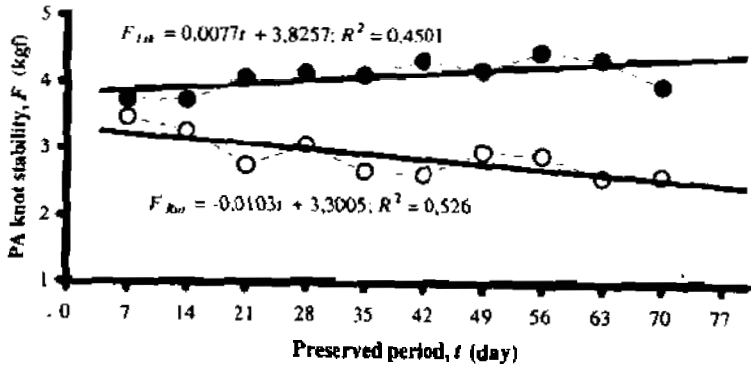
Percentage of PA knot that release after preserving is fluctuate along with time added. but if on an average its value reach 18.25 %. It means knot stability is increase. From 400 knot net mesh that is pull, it turned out only 73 knots that released. Or, release knot amount every pulling of 40 meshs as many as 7 pieces. This value is lower from knot percentage of PA control that release as big as 57.5% (23 knots). Knot amount that release along with its increasing of increase the preserved time, but with less amount.

Preserved of PA net with latex is causing its knol stability increase, like shown in Picture 3. Its regression equation is $F_{Lk} = 0.0077\ t + 3.8257$ with positive slope value (+). Slope value 0.0077 shows that every increase of soaking period as big as one unit will causing breaking strenght of PA yam that preserved with increasing as big as 0.0077 unit on first knot stability. Determination value as big as 45.01% on those equation which is small shows alot of observation data that can not be explain.

Stability value of PA knot that preserved with latex in every preserved period is less than knot stability value of PA control as big as 7.22 kgf. Therefore, although happends increasing of stability along with added of preserved period, but still its stability value is under knot stability value of PA control. So, preserved with latex can cause on knot stability decreasing.



Picture 2. Percentage of release PA knot after preserved with rui (o) and latex (•)



Picture 3. Relation between preserved period t with PA knot stability that preserved with rui F_{Rui} (o) and lateb F_{Lat} (●)

3.2. *Polyethylene* (PE) Knot Stability

a. Preserved result by using rui

Pulling on 40 net mesh of PE control is resulting knot amount of PA control that release as many as 30 pieces (75 %). Knot amount that release after preserved with rui increasing as big as 81.25 %, or averagely 33 knots for each treatment period. Although added of knot amount that release is little if compare with control knot, but preserved with rui cause knot stability of PE net getting less.

Preserved of PE knot with rui not realy causing any increasing of stability value starts from preserved period 7 until 70 days. From Picture 5 shows those regression equation (F_{Rui} = 0.0019 t + 7.4647) with slope value 0.0019 that relatively flat. Those equation determination value as big as 0.1745 explain that too many datas that can not be explain by thar equation.

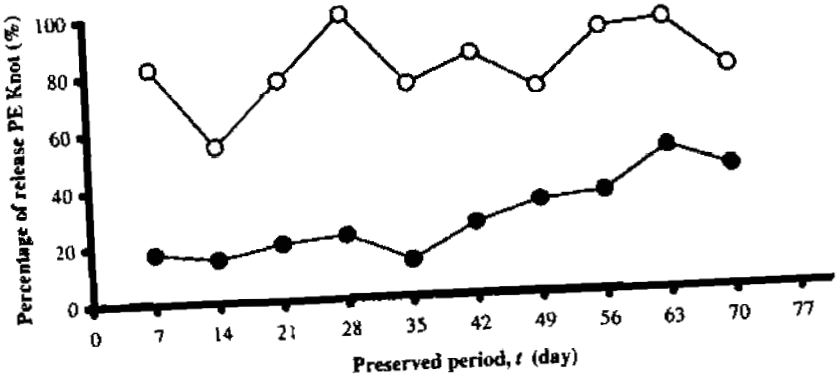
Soaking of PE knot in rui preserved fluid, straightly decrease its stability. Stability value of PE knot that preserved -- starts from preserved period 7 – 70 days – lower than its control knot stability. Therefore rui preserved is give negative influence on PE knot stability.

b. Preserved result by using lateks

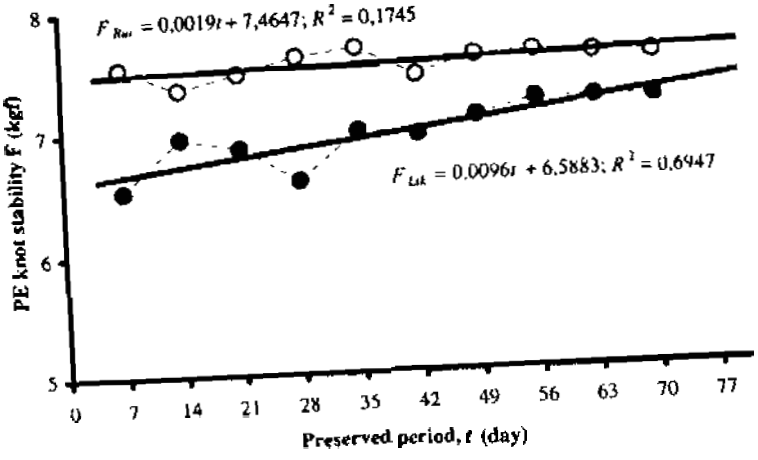
Preserved of net mesh with lateks cause knot amount that release as many as 27.25% from total 400 mesh that test by pulling (Picture 4). Or as many as 11 knoo for every soaking period with sample amount as many as 40 knots. This amount is more less from experiment result of pulling the sample net mesh that resulting release knot amount as many as 75 % or 30 knots from 40 net rneshs that experimented. Preserved with latex is causing knot amount that realease decreasing.

In Picture 5 shows relation between preserved periods inside latex fluid with PE knot stability. Knot stability starts from the 7 – 70 days inclined increasing, like shown by its regression equation $F_{Lateks} = 0.0096\ t + 6.5883$. Low slope value 0.0096 shows stability increasing – along with added of preserved period – very low.

Latex preserved give negative impact to knot stability It's shown by PE knot stability value on every preserved period also under knot stability of PE control.



Picture 4. Percentage of release PE knot after preserved with rui (o) and lateks (●)



Picture 5. Relation between preserved period t with PE knot stability that preserved with rui F_{Rui} (o) and latex F_{Lik} (●)

3.3. Preserved Effect

Preserved of PA and PE knot, with rui or lateks preserved, and is causing its stability value decrease. Both cause knot become easier to release when pulling experiment. On PA yarn, rui effect is more worse compare with latex. It so for PE knot, latex preserved is give negative effect compare with rui.

PA net yarn have special characteristic, which small water absorb strength (Sari, 1995). When PA knot that preserved with latex pick up and drain up, so its colour change to black. This is cquse by carbon compound that substain inside latex. It so happends red with brownies colour on PA knot that preserved with rui is causing by red with brownies colour pigment on rui. According to Lemmens & Wulijarni (1999), red with brownies colour comes from *salam* plants pigment. PA net yarn that preserved with latex and rui also experience changes on diameter and rigidity, which yarn become stiffer and its diameter also increase. This increase is causing by adhesion power between PA net yarn with those two preserved that bigger than its cohesion power. This pull-drawn power is cause rui and lateks able to patch on net yarn.

PA yarn fiber is very soft and its space between fibers is very tight. Characteristic of rui which is more liquid from latex causes its easy to enter inside space between fibers. The result PA *knot* is expand and slippery. This is different with latex. This fluid is thicker and easy draining when knor is picking up from preserved fluid. Form of latex that covered knot will be little holds movement between yarns on knot when pulling experiment.

Effect of those two preserved on PE knot is different with PA knot. Construction of PE yarn is different with PA yarn. PE yam is slippery, stiff, and its fiber is hard. According to Arzano (1959). PE does not absorb water. Besides that, there are cavities between fibers that relative big. In knot shape, this cavity amount is much more. When preserving, latex preserved fluid will enter inside those cavities. When latex draining, knot become harder to release.

4. CONCLUSION

Rui preserved decreasing PA knot stability value as big as 60 % and PE 46 %, meanwhile latex decreasing PA knot stability value as big as 43 % and PE 50 %.

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