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*(Populus nigra)*

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(E-mail:najafiana@yahoo.com )

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BCTMP

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TMP CTMP APMP

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*E.grandis*

*E.saligna E.grandis*

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COD

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-Sferrazza

-Xu

-Bohn

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*P.nigra*

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*P.nigra P.alba*

-Impressifiner

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T<sub>sp</sub>

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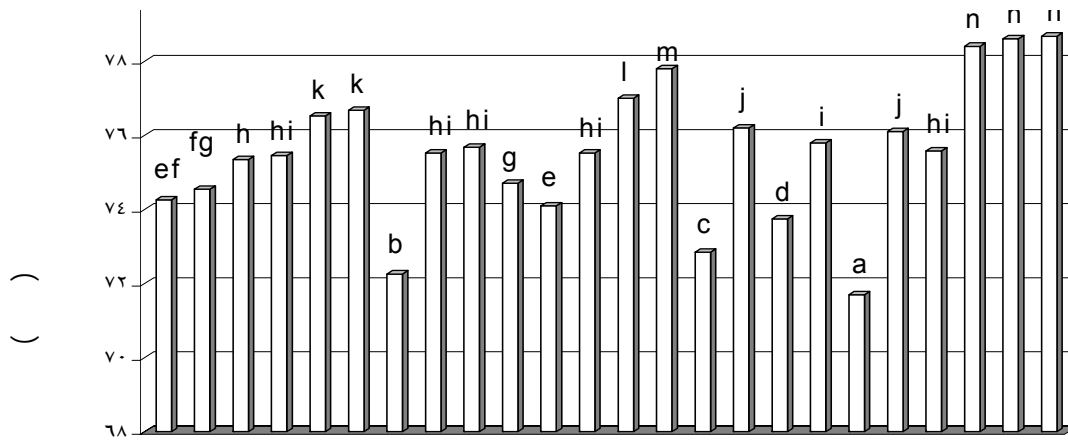
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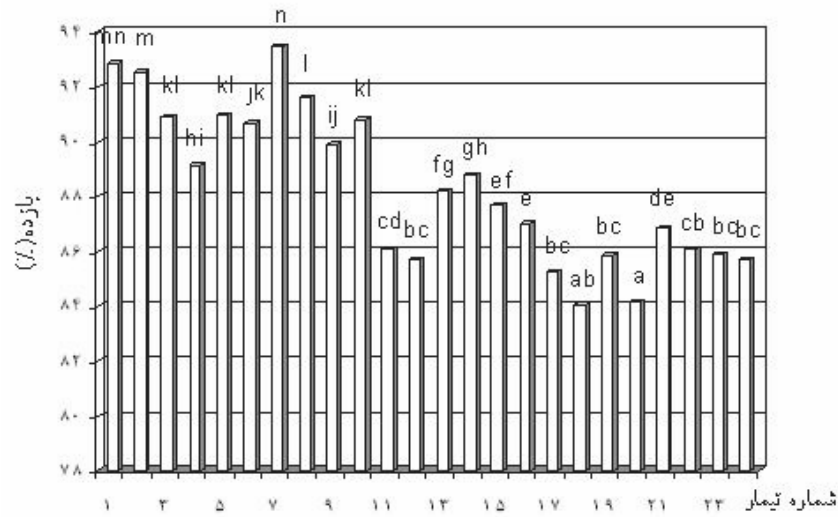
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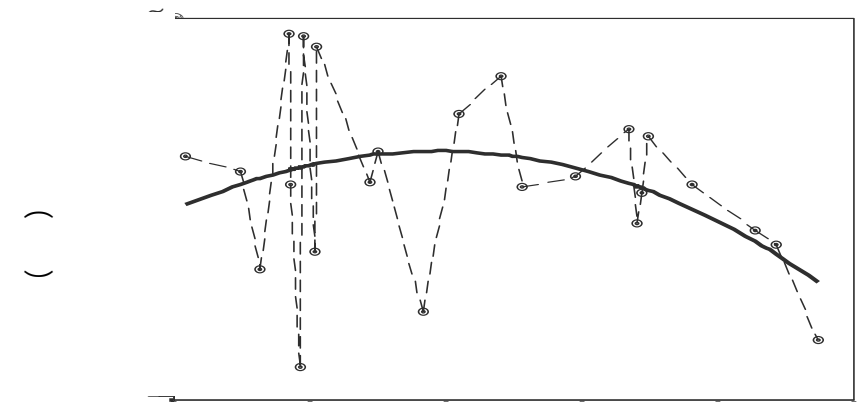


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cubic  
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P = / R = /

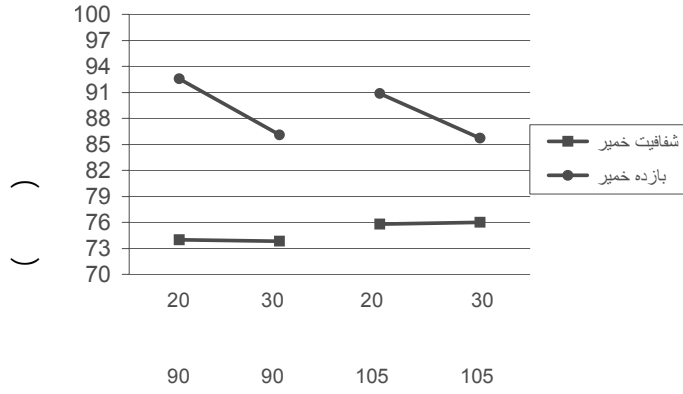


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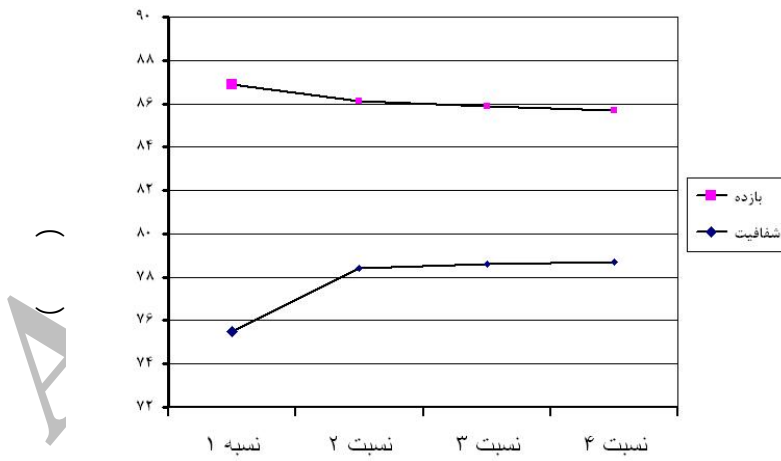
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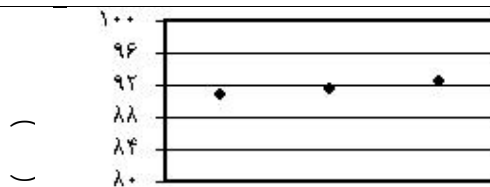
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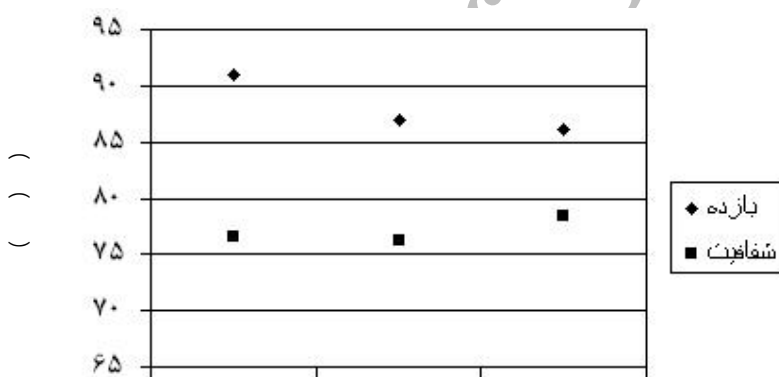


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## The Effects of Some Process Variables on *Populus nigra* APMP Pulp Yield and Brightness

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### Abstract

The Effects of some process variables on *P. nigra* APMP pulp yield and brightness were investigated. Wood samples were prepared from poplar plantation fields in the vicinity of Maragheh Paper Company. Fiber dimensions such as average fiber length, diameter cell cavity and fiber wall thickness were assessed as 853, 22.66, 15.16 and 3.74 microns, respectively. For making APMP pulp, different chemicals namely sodium hydroxide (6 and 7%), hydrogen peroxide (5 and 6%) diethylene triamine pentaacetic acid (0.5%) and sodium silicate (3.5%) (based on O.D chips). were used. Based on the preliminary chemical treatment results, chips treated with preheating of 20 minutes, impregnation times of 20 and 75-105 minutes in first and second stages, pulp consistency of 34-36% and 23-25% in the first and second stages of impregnation, respectively, percentages of caustic charge in 3 levels of 40,50 and 60% in the first impregnation stage, percentages of peroxide charge in 3 levels of 20,25 and 44% in the first impregnation stage, percentages of diethylene triamine pentaacetic acid in 2 levels of 60 and 75% as well as percentages of sodium silicate of 50% in each stage of chemical impregnation, were selected as the process conditions. The APMP pulp brightness and yield obtained in the 24 treatments, were in the ranges of 71.7 –78.6% and 84.17 –93.46%, respectively. The final results indicated that by using optimum process variables such as total caustic and peroxide charges of 7 and 6% respectively, percentages of caustic, peroxide and diethylene triamine pentaacetic acid in the first impregnation stage of 60,20 and 75%, consistency of 34 and 23% in the first and second stages respectively, It is possible to produce APMP pulp of high brightness in an acceptable yield range.

**Keywords:** *P.nigra*, APMP, Writing and printing paper, Process variables, Brightness, Pulp yield.

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