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TURNING WHEAT STRAW IN A SUSTAINABLE RAW MATERIAL FOR PAPER INDUSTRY

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Abstract

Deforestation is a vital problem at global level, being one of the main causes of climate change. Volume of wood used in construction, furniture and pulp and paper industries increases year by year. Stopping the decrease of forests surface is of imperative importance from the point of view of sustainability. Pulp and paper industry faces with severe lack of pulpwood and for this reason other raw materials are taken into consideration. Chemical pulp can be partially replaced with recovered paper but low paper grades can be produced only. In addition, recovered paper is collected in limited quantities, which do not assure the large requirements of paper industry. For these reasons, obtaining of chemical pulp from nonwood raw materials is of particular importance.

The paper deals with the investigation of the possibility of replacing wood with an agricultural waste, namely wheat straw as raw material in producing chemical pulp for paper. It was determined that straw resulted in cultivation of wheat in Moldova region of Romania contain less lignin than wood and can be delignified using less chemicals, at lower temperatures and in shorter time. Wheat straw can be processed using common reagents like sodium hydroxide, sodium sulfide and sodium carbonate and pulps having various lignin content can be obtained. Straw pulp having low lignin content can be obtained using sodium hydroxide and sodium sulfide. If lignin content of pulp is less important, sodium carbonate can be used as unique or main reagent. Carbonate straw pulp shows good strength properties even in unrefined state. By refining, the strength properties of pulp considerably improve. Unbleached carbonate straw pulp can be used instead of wood pulp for obtaining of papers for corrugated board.

Key words: paper, pulping, resources, wheat straw

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