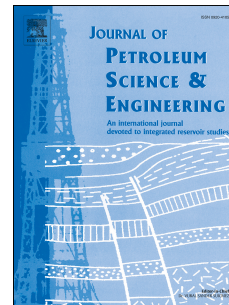


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## USING AGRO-WASTE MATERIALS AS POSSIBLE FILTER LOSS CONTROL AGENTS IN DRILLING MUDS: A REVIEW

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### ABSTRACT

The need for converting waste to wealth triggered the zeal to undertake this work. This study focused on cellulosic agro waste materials that have the potential to control filtration loss in drilling muds. There was a wide spectrum from which to choose from – from the obvious to the complex. The choice of these materials was based on the characterization of each of them from published literature but was narrowed down to the ones available in Nigeria. From the review, it was observed that a good number of researchers have been diligently studying the use of agro-waste materials as filter loss control additives in drilling muds. The inclination of most of the research studies have been towards assessing the potential of using the cellulosic agro waste materials as fluid loss control additives and then comparing their rheological and filter loss characteristics with the conventional fluid loss control additives. The available studies by various researchers on this subject have been compiled from 1997 – 2017 and the findings of each researcher is highlighted. A summary of the findings indicate that the agro waste materials were historically used as lost circulation materials, and that a mixture of two or more agro waste materials prevents lost circulation better than when used alone. However, this review further show that agro waste materials are ubiquitous and inexpensive and could equally serve as filter loss control agents in drilling muds. Thus, their utilization as filter loss control agents in drilling muds help reduce environmental pollution and ultimately reduce drilling fluid costs. From an economic perspective, this work indicates that all the agro waste materials were cost effective even after processing compared to the conventional fluid loss control materials such as carboxymethyl cellulose and polyanionic cellulose. In this respect, saw dust and corn cob were found to be the cheapest and most expensive agro waste materials respectively. This work also highlighted some gaps in the literature which should be filled. These gaps include but are not limited to: microscopic structure analysis and filter cake properties description of the muds formulated with agro waste materials.

**Keywords:** Agro waste; Cellulosic materials; Filter loss; Filter cake; Fluid loss control

### 1. INTRODUCTION

There is no well drilled today without the use of drilling fluids. These fluids may vary in composition but their functions remain largely the same. Apart from transporting cuttings from the bottom of the well to the surface, keeping the drill bits and drillstring cool, holding cuttings in suspension when mud circulation ceases and preventing formation fluids from prematurely gaining access into the wellbore; drilling fluids also are designed to reduce filtrate loss to the formation, form thin filter cakes that plaster the walls of the borehole to ensure minimal fluid loss to the formation and promote the stability of the drilled well. However, it should be noted that when a permeable formation is exposed to drilling mud during mud circulation, the liquid components of the mud would find its way into the formation while the solid components of the mud would build a thin cake of mud solids on

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