Development of Corn (Zea mays L.) Stalk Geotextile Net for Soil Erosion Mitigation

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Abstract : This study aimed to introduce new natural fiber to be used in the production of geotextile net for mitigation of soil erosion. Fiber extraction from the stalks was the main challenge faced during the processing of stalks to ropes. Thus, an investigation on the extraction procedures of corn (Zea mays L.) stalk under biological and chemical retting was undertaken. Results indicated significant differences among percent fiber yield as affected by the retting methods used with values of 15.07%, 12.97%, 11.60%, and 9.01%, for dew, water, chemical (1 day after harvest and15 days after harvest), respectively, with the corresponding average extracting duration of 70, 82, 89, and 94 minutes. Physical characterization of the developed corn stalk geotextile net resulted to average mass per unit area of 806.25 g/m² and 241% water absorbing capacity. The effect of corn stalk geotextile net in mitigating soil erosion was evaluated in a laboratory experiment for 30 < sup>0 </sup> and 60 < sup>0 </sup> inclinations with three treatments: bare soil (A₁), corn stalk geotextile net (A₂) and combined cornstalk geotextile net and vegetation cover (A₃). Results revealed that treatment A₂and A₃ significantly decreased sediment yield and an increase in terms of soil loss reduction efficiency. The cost of corn stalk geotextile net is Php 62.41 per square meter. **Keywords :** corn stalk, natural geotextile, retting, soil erosion

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