The clean and rapid method of sub/supercritical water hydrolysis has been proven technically feasible for recovering fermentable sugars from lignocellulosic raw materials intending to produce bioethanol. However, there is still lack of information before it can scaled-up to industrial level. A semi-batch unit was used to perform subcritical water hydrolysis of sugarcane bagasse at two conditions: subcritical water at 206 °C with reactor pre-heating at 100 °C and subcritical water at 210 °C with reactor pre-heating at 150 °C. The process time was 40 min, the pressure was 20 MPa and the water flow rate was 10 mL/min. The hydrolysate was characterized according to its pH, reducing sugars and total reducing sugars. The Somogyi-Nelson colorimetric method was adopted for reducing and total reducing sugars determination. The reducing sugars recovery rate increased up to a maximum and then decreased for both temperatures. When the pre-heating temperature was 150 °C the maximum sugars concentration was found 8 min earlier than for pre-heating temperature of 100 °C. The pH varied according to the sugars concentration in the hydrolysate due to sugars degradation during subcritical water hydrolysis, which releases organic acids. The liquefaction degree of the sugarcane bagasse was 67 % at 206 °C and 73 % at 210 °C. Reducing sugars were 9 % at 206 °C and 12 % at 210 °C and total reducing sugars were 16 % at 206 °C and 22 % at 210 °C. Therefore, subcritical water at 210 °C with pre-heating of 150 °C was the optimal condition.