Enhancing Sustainability: Brewer's Spent Grain-based Biochar as a Renewable Energy Source and Agriculture Substrate

Romina Zabaleta 1, Erick Torres 1, Eliana Sánchez 1, Rodrigo Torres-Sciancalepore 2, María Paula Fabani 1, 3, Germán Mazza 2, , Rosa Rodriguez 1, \*

1 Instituto de Ingeniería Química-Grupo Vinculado al PROBIEN (CONICET-UNCO), Facultad de Ingeniería, Universidad Nacional de San Juan, Argentina.

2 Instituto de Investigación y Desarrollo en Ingeniería de Procesos, Biotecnología y Energías Alternativas, PROBIEN (CONICET-UNCo), Neuquén, Argentina.

3 Instituto de Biotecnología, Facultad de Ingeniería, Universidad Nacional de San Juan, Argentina.

**\*** Correspondence: rrodri@unsj.edu.ar

1. **Equations for BSG biochar characterization**

(A.1)

(A.2)

(A.3)

(A.4)

(A.5)

(A.6)

Where BY was yield, daf was dry and ash-free, CBC and CF were the mass fractions of carbon in the biochar (BC) and feedstock (F), respectively.

1. **Equations used in Bioenergy Indices**

(B.1)

(B.2)

(B.3)

(B.4)

(B.5)

(B.6)

(B.7)

Where were yield.