



Analysis of the Feasibility of Generating Solid Biofuel from Ulex Europaeus Plants [

2020

text (article)

Analítica

The *Ulex europaeus* (also known as Common Gorse) represents a threat to the native ecosystems of different Colombian regions. Recently, the Ministry of the Environment and Sustainable Development introduced protocols for its prevention and management. Even though the *Ulex europaeus* has a high calorific value, a wide-spread solution for its post-processing is not yet available in its affected areas. In Colombia, the most common method for the disposal of the harvested plant is incineration, given that this is the suggested method by Resolution 684 of 2018. Due to the importance of the problem, this investigation is focused on studying the viability of creating solid biofuel alternatives derived from the plant. Grinded material and briquettes were produced with different log/foilage ratios in order to investigate both the domestic and industrial applications of the plant; e.g. heating, cooking and cogeneration, respectively. A proximate and ultimate analysis was performed on the produced samples. The generated solid biofuel presents 75% of the carbon heat value, a high volatile material content (83.3%), and low ash and Sulphur residues (1.41% and 0.15% respectively). These results applied to both dry and humid samples, demonstrated that the produced solid biofuel is adequate for applications oriented towards heat generation. However, further analysis and process optimization is required in order to establish the generation of solid biofuel as an appropriate use of the *Ulex europaeus* remnants. By further analyzing the overall process; from plant removal, through residue disposal, and finally remnant conversion, the investigations value chain can be better established and possibly established for real world implementation

The *Ulex europaeus* (also known as Common Gorse) represents a threat to the native ecosystems of different Colombian regions. Recently, the Ministry of the Environment and Sustainable Development introduced protocols for its prevention and management. Even though the *Ulex europaeus* has a high calorific value, a wide-spread solution for its post-processing is not yet available in its affected areas. In Colombia, the most common method for the disposal of the harvested plant is incineration, given that this is the suggested method by Resolution 684 of 2018. Due to the importance of the problem, this investigation is focused on studying the viability of creating solid biofuel alternatives derived from the plant. Grinded material and briquettes were produced with different log/foilage ratios in order to investigate both the domestic and industrial applications of the plant; e.g. heating, cooking and cogeneration, respectively. A proximate and ultimate analysis was performed on the produced samples. The generated solid biofuel presents 75% of the carbon heat value, a high volatile material content (83.3%), and low ash and Sulphur residues (1.41% and 0.15% respectively). These results applied to both dry and humid samples, demonstrated that the produced solid biofuel is adequate for applications oriented towards heat generation. However, further analysis and process optimization is required in order to establish the generation of solid biofuel as an appropriate use of the *Ulex europaeus* remnants. By further analyzing the overall process; from plant removal, through residue disposal, and finally remnant

conversion, the investigations value chain can be better established and possibly established for real world implementation

The *Ulex europaeus* (also known as Common Gorse) represents a threat to the native ecosystems of different Colombian regions. Recently, the Ministry of the Environment and Sustainable Development introduced protocols for its prevention and management. Even though the *Ulex europaeus* has a high calorific value, a widespread solution for its post-processing is not yet available in its affected areas. In Colombia, the most common method for the disposal of the harvested plant is incineration, given that this is the suggested method by Resolution 684 of 2018. Due to the importance of the problem, this investigation is focused on studying the viability of creating solid biofuel alternatives derived from the plant. Grinded material and briquettes were produced with different log/foilage ratios in order to investigate both the domestic and industrial applications of the plant; e.g. heating, cooking and cogeneration, respectively. A proximate and ultimate analysis was performed on the produced samples. The generated solid biofuel presents 75% of the carbon heat value, a high volatile material content (83.3%), and low ash and Sulphur residues (1.41% and 0.15% respectively). These results applied to both dry and humid samples, demonstrated that the produced solid biofuel is adequate for applications oriented towards heat generation. However, further analysis and process optimization is required in order to establish the generation of solid biofuel as an appropriate use of the *Ulex europaeus* remnants. By further analyzing the overall process; from plant removal, through residue disposal, and finally remnant conversion, the investigations value chain can be better established and possibly established for real world implementation

<https://rebiunoda.pro.baratznet.cloud:38443/OpacDiscovery/public/catalog/detail/b2FpOmNlbGVicmF0aW9uOmVzLmJhcmF0ei5yZW4vMzM4NTgyODE>

Título: Analysis of the Feasibility of Generating Solid Biofuel from *Ulex Europaeus* Plants [electronic resource]

Editorial: 2020

Tipo Audiovisual: common gorse energy recycling solid biofuel *Ulex europaeus* biocombustible sólido energía reciclaje retamo espinoso *Ulex Europaeus* biocombustível sólido energia reciclagem retamo espinhoso *Ulex Europaeus*

Documento fuente: Facultad de Ingeniería, ISSN 0121-1129, Vol. 29, N°. 54, 2020

Nota general: application/pdf

Restricciones de acceso: Open access content. Open access content star

Condiciones de uso y reproducción: LICENCIA DE USO: Los documentos a texto completo incluidos en Dialnet son de acceso libre y propiedad de sus autores y/o editores. Por tanto, cualquier acto de reproducción, distribución, comunicación pública y/o transformación total o parcial requiere el consentimiento expreso y escrito de aquéllos. Cualquier enlace al texto completo de estos documentos deberá hacerse a través de la URL oficial de éstos en Dialnet. Más información: <https://dialnet.unirioja.es/info/derechosOAI> | INTELLECTUAL PROPERTY RIGHTS STATEMENT: Full text documents hosted by Dialnet are protected by copyright and/or related rights. This digital object is accessible without charge, but its use is subject to the licensing conditions set by its authors or editors. Unless expressly stated otherwise in the licensing conditions, you are free to linking, browsing, printing and making a copy for your own personal purposes. All other acts of reproduction and communication to the public are subject to the licensing conditions expressed by editors and authors and require consent from them. Any link to this document should be made using its official URL in Dialnet. More info: <https://dialnet.unirioja.es/info/derechosOAI>

Lengua: English

Enlace a fuente de información: Facultad de Ingeniería, ISSN 0121-1129, Vol. 29, N°. 54, 2020

- (+34) 91 456 03 60
- informa@baratz.es