## 5<sup>th</sup> World Bioenergy Congress and Expo

June 29-30, 2017 Madrid, Spain

## Physical and chemical properties and growing media applications of pretreated wood chip

Si Young Ha, Ji Young Jung, Jeong Bin Nam, Ji-Su Kim and Jae-Kyung Yang Gyeongsang National University, South Korea

Nonsiderable research on the use of other organic materials (e.g., bark, manure and sludge) as growing media has been conducted. The use of wood chip substrates as primary materials for growing media preparation has recently increased. Unfortunately, wood chips can contain phytotoxic compounds such as phenols, which are toxins that affect plant germination. This study aimed to evaluate the potential for using ground wood chips (Quercus mongolica) as growing media after steam pretreatment. The pretreatment conditions included grinding after steaming (10 min, 20 min, and 30 min intervals) with pressures of the order of 1.5 kg/cm2, and changes in physical (porosity and water holding capacity) and chemical (pH, organic matter and phenolic content) properties were subsequently compared to those of untreated samples to evaluate the suitability of treated samples for use as growing media. The germination rates of plants grown on common growing media (peat and perlite) were then compared to those grown on pretreated wood chips (1:1:1,w/w/w). The results indicated that when used as growing media, pretreated wood chips exhibited better physical and chemical properties than untreated wood chips. The 30 min pretreatment regimen resulted in high water retention capacity, high organic matter contents, and suitable C/N ratios compared to other pretreatment conditions and untreated samples. The 30 min pretreatment resulted in the lowest observed phytotoxicity and phenolic contents compared to other pretreatment conditions and untreated samples. Moreover, the use of growing media containing pretreated wood chips resulted in similar germination rates as those observed on common growing media and media containing wood chips that were pretreated for 30 min. Therefore, wood chips that undergo the 30 min pretreatment regime represent a suitable growing media substitute, and this outcome is likely associated with the alterations in the physical and chemical properties that occur during the steaming process. However, issues linked to pretreatmentassociated expenses need to be resolved.



Figure 1: Effects of pretreatment condition on physical properties, chemical properties and germination rate for the use of wood chip to growing media

## Biography

Si Young Ha is a PhD student of Gyeongsang National University in South Korea. She has her expertise in producing growing media using wood biomass and evaluation in improving the growing media for plant growth. She had retained a keen interest and has applied it in various fields of wood biomass. She also has experience in poster presentation in the Symposium on Biotechnology for Fuels and Chemicals.

hellohsy2@gmail.com

## Notes: