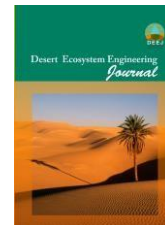




University of Kashan

Desert Ecosystem Engineering Journal

Journal homepage: <http://deej.kashanu.ac.ir>

## A comparison on potential of ligno-cellulosic biomass for ethanol production from halophyte species in desert regions Case study: *Atriplex leuoclada* and *Suaeda vermiculata*

Ehsan Zandi Esfahan<sup>1\*</sup>, Ali ashraf Jafari<sup>2</sup>, Ali Mohebbi<sup>3</sup>

Received: Sep/8/2015

Accepted: Nov/5/2015

### Abstract

World reserves of petroleum are being consumed rapidly and expected to exhaust by the middle of this century. This realization has led to the introduction of various grades of ethanol supplemented fuel. However, ethanol demands met from sources used for food may cause food shortage. This necessitates exploiting saline lands to produce non-food ligno-cellulosic biomass which, may be converted into ethanol without compromising human food production. Halophytes which produce plenty of biomass using saline resources (water and soil) may be an important alternative especially in desert regions. In current study, *Atriplex leuoclada* and *Suaeda vermiculata* were collected from Fars, Hormozgan, Khuzestan and Semnan provinces and ligno-cellulosic composition was investigated. According to the results, *Atriplex leuoclada* has the potential as bio-ethanol crops. It is a perennial species and resistant to salinity, with high growth rates to produce ligno-cellulosic biomass of good quality (25-29% cellulose, 22-25% hemi-cellulose, and less than 8 % lignin).

**Keywords:** Bio-ethanol, cellulose, environment friendly, lignin, salinity.

1. Corresponding author, Assistant Professor, Rangeland Research Division, Research Institute of Forests and Rangelands, Agricultural Research Education and Extension Organization (AREEO), Tehran, Iran

2. Professor, Rangeland Research Division, Research Institute of Forests and Rangelands, Agricultural Research Education and Extension Organization (AREEO), Tehran, Iran

3. Assistant Professor, Rangeland Research Division, Research Institute of Forests and Rangelands, Agricultural Research Education and Extension Organization (AREEO), Tehran, Iran