Potential Biofuel Grown with Salt Water

SALICORNIA, A GREEN FUEL THAT CAN BE PRODUCED WITHOUT WASTING FRESHWATER OR FARMLAND

CALICORNIA FOR GREEN FUEL

Seawater-based agriculture is a new frontier in rehabilitation of coastal areas, aquaculture, and also to grow cash-crops. One potentially profitable crop that can be grown with seawater is Salicornia *(S. Bigelovii)*, also known as sea asparagus. The oil-rich seeds of Salicornia are now being recognized as having real potential in producing biofuel without wasting freshwater or farmland.

ICBA, in collaboration with the Masdar Institute of Science & Technology in the United Arab Emirates (UAE), took the initiative in partnering with Boeing and the University of Arizona (USA) to evaluate the potential use of seawater to grow Salicornia for use as a biofuel and maintaining CO_2 equilibrium. The results were encouraging. Seed sourced by ICBA produced about four times more seed than other genetic material, up to 1.9 tons of seed per hectare. The current work not only further validates the results of different genotypes, but also the oil and other seed content. ICBA and partners will now evaluate genotypes of this promising species and other native UAE halophytes for their oil potential as well as well as seed viability.

Another collaboration of ICBA is with the King Abdul Aziz University of Science & Technology (KAUST) who have acquired and developed many genotypes of Salicornia for their breeding program. ICBA is collaborating with both Masdar and KAUST in evaluation of about 50 different genotypes under sea water conditions. Recently Wageningen University in the Netherlands has shown interest to test their Salicornia material under UAE conditions.

1.9 tons of seed per hectare

The results also show that there is a potential for the use of seawater in certain types of production systems (seawater-based agriculture), to reduce demand for freshwater.

ICBA – The International Center for Biosaline Agriculture is a non-profit, autonomous international agricultural research center with headquarters in Dubai, UAE. ICBA conducts research and development programs that aim to improve agricultural productivity and sustainability in marginal environments. The Center's multi-pronged approach to strengthening the agricultural sector to expand food production through improved and better access to technology, improved germplasm, policies, strategies and programs, is critical to achieve greater food, water, environment, and income secur

ICBA is a not-for-profit, international center of excellence for research and development in marginal environments. It was established in 1999 through the leadership of the Islamic Development Bank, the Organization of Petroleum Exporting Countries (OPEC) Fund, the Arab Fund for Economic and Social Development and the Government of United Arab Emirates. The host country, through the Ministry of Water and Environment and the Environment Agency – Abu Dhabi extended the agreement with IDB in 2010 and increased their financial support to the Center.

The Center originally focused on the problems of salinity and using saline water for irrigated agriculture. Over the last 13 years, ICBA has evolved into a world-class modern research facility with a team of international scientists conducting applied research to improve the well-being of poor farmers in marginal environments. In 2013, the Center developed a new strategic direction addressing the closely linked challenges of income, water, nutrition, and food security. The new Strategy takes innovation as a core principle and identifies five innovations that form the core research agenda: assessment of natural resources; climate change adaptation; crop productivity and diversification; aquaculture and bioenergy, and policy analysis. ICBA is working on a number of technology developments including the use of conventional and non-conventional water (such as saline, treated wastewater, industrial water and seawater); water and land management technologies; remote sensing and modeling for climate change adaptation.