To,

Mr. Maa

**Subject: Cultivation of Sweet Sorghum in Dessert Land of Pakistan for Production of Bioethanol as Energy Crop and as High Protein Feed for Livestock**

Giga Group is one of the leading traders in UAE. Giga group comprises of several companies independent and jointly owned by the Giga family in Middle East, Pakistan and Africa. The group has launched joint ventures with EMMAR (one of the largest international property developers) and Al-Ghurair group (one of the biggest group in UAE) in Pakistan which have resulted in Gold Crest Views 1, 2 and 3 in Dubai, D-mall and World Trade Centre in Islamabad Pakistan. Giga group has also invested in various business. Some of them include acquiring of 108 acres of sea land in Karachi to develop Crescent Bay. It is also running Textile Mill in Africa and is actively trading Gold in UAE and owns Al-Ghurair Giga Gold Refinery. Giga group started in 1886 and has been successful in every venture that it has started.

The sweet sorghum project is the upcoming project of Giga group which holds a lot of potential. With the depletion of nonrenewable fossil fuels and world’s high dependence on them, most of the developed countries have now started to look for alternative renewable fuels. Renewable fuels have now become one of the best business investment opportunity today. With this project Giga Group plans to cultivate 0.5 million acres of land in Pakistan. The group has already run successful pilot scale projects in Tharparkar with the results being validated by PCSIR laboratory scientists. Giga Group will take the full responsibility of this project. This project bounds to provide profit to the investors.

The sweet sorghum project focuses on cultivation of sweet sorghum on arid and dry land in Pakistan for its utilization in production of bioethanol as biofuel and feed for livestock. This project opens multitude of benefits not only for Pakistan but also for investors in this project.

Sweet sorghum [*Sorghum bicolor* (L.) Moench], a C4 Graminaceous crop which has sugar-rich stalks and which is a water-use efficient crop has a very good potential as an alternative feed stock for ethanol production. It is the only crop that provides grain and stem that can be used for sugar, alcohol, syrup, jiggery, fodder, fuel, bedding, roofing, fencing, paper and chewing. Besides having rapid growth, high sugar accumulation, and biomass production potential, sweet sorghum has wider adaptability. It is well adapted to sub-tropical and temperate regions of the world and it is water efficient. Sweet sorghum has many good characteristics such as a drought resistance, waterlogging tolerance, salinity resistance and with a high yield of biomass etc. In addition, sweet sorghum is a C4 crop with high photosynthetic efficiency. Thus development of sweet sorghum in Pakistan will play an important role in promoting the development of agricultural production, livestock husbandry, energy sources (biofuels), refining sugar, paper making etc.

In Pakistan a lot of land is uncultivable due to salinity and a vast area constitute of dessert. This plant is well suited to be grown in bulk over these areas. Moreover, the people of these areas are mostly unemployed so cultivating sweet sorghum as an energy crop can open source of income for them. The area we are trying to cultivate through this plant is dessert land of Cholistan. Sweet sorghum is well adapted to the climatic conditions of this area.

The sugar containing juice of sweet sorghum will be fermented for the production of bioethanol which will be used as energy source in both power plants as well as automotive fuel blends. Ethanol produced in this way is renewable and produces very low greenhouse gasses as compared to petro-diesel. It is an environmental friendly greener and cleaner fuel.

A part from the production of biofuel, as mentioned earlier, sweet sorghum is a high fiber plant which after removal of its sugar content for ethanol production can be processed and used as fodder for cattle thus supporting the livestock of country. Livestock has a wide share in Pakistan’s GDP and milk and meat import by supporting live stock in this way can greatly be enhanced.

The project potentially brings following advantages:

* Production of alternative source of green energy which is environmentally friendly and eliminates the problem of GHG emissions. This energy can be used for running of both electric power plants and automobiles.
* Additionally, this project will also support livestock by provision of natural fodder which will enhance both milk and meat production. This will increase the export of meat and milk.
* This project will help in cultivation of land which is considered barren in Pakistan.
* The project is bound to open a large number of employment opportunities for people residing in both rural and urban areas in Pakistan.
* The project also aims the development of a research institute which will promote research and development (R&D) activities in Pakistan.
* Increased plantation of crops will also help in the reduction of climatic shifts like global warming and drought due to low rainfall.
* With the new and more flexible policies of investments for the foreign as well as domestic investors this project is bound to give them maximum benefit in both social and economic terms.
* It will lead to the development of agriculture and livestock industry of Pakistan resulting in soci-economic stability (Development of 600,000 cattle farms throughout Pakistan).
* Most importantly this project will diminish Pakistan’s dependency upon the fuels that have to be imported resulting in price hike.

The Giga Group would like to offer this 0.5 million acres of land to your company for the joint venture with our company. Our company is highly committed. We expect you to provide us with Sweet Sorghum Seeds, Machinery and Man Power for this project.

Awaiting your reply,

Best Regards,

Haji Muhammad Amin Pardise GIGA

Chairman, GIGA Group of Companies

**巴基斯坦沙漠地区种植甜高粱作为能源植物制作生物酒精并为牲畜提供高蛋白饲料**

甜高粱项目是Giga集团即将开展的项目，该项目具有很大的潜力。随着不可再生化石燃料的枯竭以及世界对它们的高度依赖，大多数发达国家现在开始寻找替代的可再生燃料。可再生燃料现已成为当今最佳商业投资机会之一。通过该项目，Giga集团计划在巴基斯坦种植50万英亩的土地。该小组已经在Tharparkar开展了成功的试点项目，其结果得到了PCSIR实验室科学家的验证。 Giga Group将承担该项目的全部责任。该项目必将为投资者提供利润。

甜高粱项目的重点是在巴基斯坦干旱和干旱的土地上种植甜高粱，用于生产生物燃料作为生物燃料和牲畜饲料。

在巴基斯坦，由于盐度和大面积的沙漠，很多土地都是无法耕种的。这种植物非常适合在这些地区大量种植。此外，这些地区的人们大多是失业的，所以种植甜高粱作为能源作物可以为他们开辟收入来源。我们试图通过这种植物种植的地区是Cholistan的沙漠土地。甜高粱很好地适应了该地区的气候条件。

甜高粱的含糖果汁将被发酵用于生产生物乙醇，生物乙醇将用作发电厂以及汽车燃料混合物的能源。与石油柴油相比，以这种方式生产的乙醇是可再生的并且产生非常低的温室气体。它是一种环保的绿色和清洁燃料。

甜高粱是一种高纤维植物，在除去其用于乙醇生产的糖含量后，可以加工并用作牛的饲料。畜牧业在巴基斯坦的国内生产总值和牛奶和肉类进口中占有很大的份额，通过这种方式支持畜牧业可以大大增强。

该项目可能带来以下优势：

•生产环保的替代绿色能源，消除温室气体排放问题。该能量可用于发电厂和汽车的运行。

•此外，该项目还将通过提供天然饲料来支持牲畜，这将增加牛奶和肉类的产量，提高肉类和牛奶的出口。

•该项目将有助于耕作巴基斯坦贫瘠的土地。

•该项目必将为居住在巴基斯坦农村和城市地区的人们提供大量就业机会。

•该项目还旨在建立一个研究所，以促进巴基斯坦的研发活动。

•作物种植面积的增加也有助于减少全球变暖和降雨量低导致的干旱等气候变化。

•通过针对外国和国内投资者的新的和更灵活的投资政策，该项目必将在社会和经济方面给予他们最大的利益。

•它将促进巴基斯坦农业和畜牧业的发展，从而实现社会经济稳定（在巴基斯坦各地开发60万个养牛场）。

•最重要的是，这个项目将减少因巴基斯坦对必须进口燃料的依赖导致的价格上涨。

Giga集团愿意为组建的合资企业提供50万英亩土地，并高度参与。 我们希望合作方为这个项目提供甜高粱种子，机械和人力。