

Climate Change

Farmers' Solutions



Renewable Energy

Recycling agricultural waste To manufacture charcoal briquettes

Environment - Deforestation

Uganda's forest cover has diminished from over 11 millions of hectares in 1890 to less than 4 millions of hectares in 2005 (Uganda Poverty Status Report, 2005).

The depletion of forests and green vegetation to produce charcoal are a source of environmental concerns. Deforestation has a direct effect on unprecedented floods, droughts and falling water levels of many major lakes.

Socio-economic implication

In Uganda, firewood and charcoal are the most important cooking fuel sources for the poor and middle income households. Over 90% of the population relies on these sources for heating and cooking.

Charcoal is popular because it is affordable, sold at a stable price, convenient to manufacture, accessible to all, and can be produced without external support.

Need for political actions

In Uganda's 2008-2009 national budget, only 3.4% was allocated to the agricultural sector despite that about 80% of the population work in this sector.

With the related ecological and environmental consequences of unsustainable production of charcoal, the promotion of more efficient techniques and practices is more than urgent.

District Forestry Services, an affiliate institution of the National Forestry Authority (NFA) is charged with promoting sustainable exploitation of the woodland resources.

This initiative is provided by Uganda National Farmers Federation (UNFFE), Department of Policy Research and Advocacy, Kampala, Uganda and participating farmers from Masaka, Mukono and Jinja districts.

Further information
www.unffe.org



The basic source of cooking fuel in **Uganda** is wood in the form of wood charcoal or firewood. Urban populations commonly use the wood charcoal while farmers in rural areas exclusively use firewood.

This dependence on traditional charcoal and firewood is responsible for the prevailing deforestation and soil degradation which have impacted the environment adversely. The effects are manifested in phenomena such as irregular rainfall, floods and violent storms.

The major cause of this is lack of affordable and reliable alternative sources of energy. Moreover, even in cases where alternative sources such as hydro-electric power, kerosene and gas do exist, the majority of farmers are too poor to afford to get them, hence the continuing dependence on charcoal and firewood.

To save the forest, recycling agricultural waste to manufacture charcoal briquettes is a simple, low cost and reliable technology. Charcoal briquettes are an affordable source of energy and can be used in cooking instead of the traditional charcoal and firewood.

Pilot project on "Energy Alternative Sources"

1. Fabrication of charring drums and kiln (1 to 2 days)

- perforate holes in used steel or oil drums
- cut open the drums to make a kiln
- weld on the outer ring, cover, stove pipe and handles



Kilns are thermally insulated chambers, or ovens, in which controlled temperature regimes are produced. They are used to harden, burn or dry materials.

2. Charring: heating the dry matter (1 to 2 hours)

- fill the drums with dry matters
- fill the kiln with dry matter
- put the charring drums into the kiln and add more dry matter
- put the lid on and clear any dry matter from around the kiln
- lid the kiln through each of the four ports made at the bottom of the kiln

Charring is a chemical process of incomplete combustion of a solid when subjected to heat. By the action of heat, charring removes hydrogen and oxygen from the solid, so that char is composed primarily of carbon.

pyrolysis process (1 hour)

- pour water over the kiln and around it at the end of the heating process
 - collect the char matter (powder) once cooled down
- * cautious procedure as hot char material may ignite easily.

Pyrolysis is the decomposition or transformation of a chemical compound caused by heat



3. Briquetting

- prepare the mixture of the binder agent
- mix the binder with the char powder in the appropriate ratios
- use the extruder to make briquettes from the paste
- place the briquettes on flat surfaces to dry in the sun



Quality briquettes have an optimum consistency and density



Farmers' Recommendations to Policy-Makers to the UN Framework Convention on Climate Change (UNFCCC)

Agriculture should be recognized for its **multifunctional nature** and policy makers should not assume that solutions to climate change are necessarily technical. Many of them are social and cultural.

Encouraging **participatory-based approaches** to implement small-scale projects can be very effective tools to **increase awareness** and mobilise rural communities and the population to adopt more environmentally-friendly practices. An approach that includes farmers and rural communities will help addressing the current threats caused by climate change and implement environmentally and socio-economically sustainable solutions.

Benefits of charcoal briquettes: transforming agricultural waste into energy source

Environmental

Provide energy without the use of fossil fuels. A wide range of biomass can be used as raw material.

Limit further deterioration of the forest and deforestation.

These trainings increase knowledge of farmers on alternative source of energy to wood charcoal.

Social

Increase awareness of the farmers on the need for good environmental management.

Participation of women in the making and management of the kiln.

Practical "hands-on" training in three districts in making charcoal briquettes from agricultural waste.

Economic

Easy to replicate;

Low cost;

Readily accessible sources for the farmers' households;

Incorporate social learning and practical skills development for long-term sustainability of conservation agricultural practices.

Needs for this project

Organic materials

Dry biomass such as rice or maize stalks

Small shrubs and grass

Tools

Steel drums, grinding machine, welding machine, briquetting machine, measuring tapes, mallets, chisels, and personal safety equipments.

Time required:

2 to 3 days

Project implemented by the Uganda National Farmers Federation in partnership with Appropriate Rural Technology Institute (Uganda).

