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PRACTICAL TECHNOLOGIES

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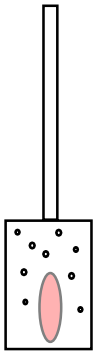
APPLICATION OF RICE HUSK CHARCOAL

Adaptability of the technology

This techology is best suited to small-scale farming, and to sandy, acidic and relatively infertile soils. It is effective for such crops as soybean, cowpea, corn and sorghum. It is also worth trying for other field crops and vegetables.

The technology

1. Preparation:
Prepare the rice husk charcoal as follows.



1) Puncture small ventilation holes in a tin can (about 18-liter capacity) and insert a metal pipe for a chimney.
2) Put several sheets of screwed-up newspaper inside the can.
3) Set fire to the newspaper.
4) Cover the can quickly with dry rice husk.
5) Wait for 6-8 hours.
6) When the surface of the heap is smoked black, remove the can from the pile of rice husk and put out the fire with water.

2. Application:
Apply the rice husk charcoal to the field at an application rate of 10-20 mt/ha. Row application is recommended, rather than broadcasting. After application, the rice husk charcoal should be mixed into the surface soil for best results.

3. Advantage:
Application of rice husk charcoal at the recommended rate will give a yield increase of 10-40 %. The rate of the increase depends on the crop, the nature of the soil, and the application rate of chemical fertilizers which supply other nutrients.

Reasons for the effectiveness of rice husk charcoal

The mechanism whereby rice husk charcoal improves crop yield is not clearly understood. The effect may vary from soil to soil. However, the following effects have been seen in experiments.

1. The rice husk charcoal increases the soil pH, thereby increasing the available P.
2. The aeration in the crop root zone is improved.
3. The water-holding capacity of the soil is improved.
4. There is an increase in the level of exchangeable K and Mg.

Caution

1. The rice husk must not be burnt so throughly that it turns to gray ash.
2. Agricultural technologies are highly location specific. Please try this new technology first on a small scale, to see if it works in your own field.

Cooperating agency for this topic:
Association for International Co-operation in Agriculture and Forestry, Japan
19, Ichiban-cho, Chiyoda-ku, 102-0082 Japan

Field trial for soybean in Thailand

	Yield (t/ha)	Relative ratio	No. of root nodules (/m2)	Relative ratio
Without charcoal*	1.56	100	777	100
With charcoal**	2.18	138	1212	156

* Chemical fertilizer (19 kg N, 56 kg P_2O_5, 38 kg K_2O / ha) was applied.

** 10 t/ha of charcoal was applied in addition to the chemical fertilizer mentioned above.

Field trial for soybean in Indonesia

	Yield (t/ha)	Relative ratio
Without charcoal*	0.65	100
With charcoal**	0.85	131

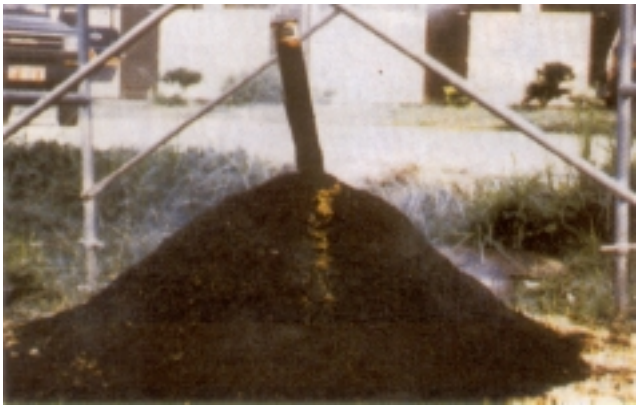
* Neither charcoal nor fertilizer was applied.

** 10 t/ha of charcoal was applied without fertilizer.

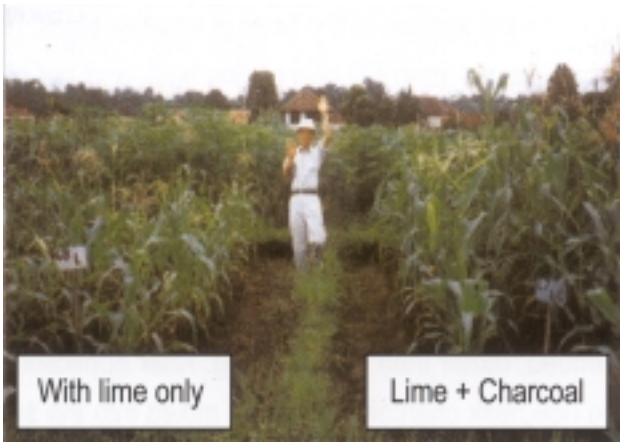
Soil properties after harvest of preceeding crop

	pH	Exchangeable cation (mg/100g soil)		Maximum water-holding capacity (%)
Without charcoal	4.7	K:50	Mg: 4.1	40
With charcoal*	5.1	K:70	Mg:10.4	47

* 10 t/ha of charcoal was applied to the preceeding crop



Making charcoal



Better growth of corn with the application of rice husk charcoal