Golden Fertiliser for Tanzanian Farmers

Biogas waste used as high quality fertiliser

To many of us, the word slurry will sound as unattractive, but to many farmers in Tanzania it is like music to their ears. Slurry is the waste product of a biogas plant and was until recently mainly used as an ordinary farm fertiliser. In the last years agricultural experts have been promoting slurry as a high quality fertiliser, breeding feed for fish, pigs and other livestock, as an organic pesticide and even as a remedy to remove ticks from livestock. It is also an important organic fertiliser that can support the whole feeding cycle of plants and can be valuable in combating soil degradation and erosion. Bio-slurry can be of economic advantage to especially small farmers as it can substitute expensive chemical fertilizers and substantially increase crop yields. The increased awareness of farmers on the benefits of bio-slurry was evidenced in the Biogas User Survey from 2013. 62% of the farmers indicated to use the bio-slurry directly as a fertilizer, 18% to make compost and 14% in fishing ponds.

What is bio-slurry?

Bio-slurry is the waste product from a biogas plant. Biogas plants are daily fed with a mixture of fresh cow dung and water, which passed the digester for a period of 2-3 months. During this period this mixture is being transformed into a bio-slurry, which contains roughly 90% water and 10% dry matter. This dry matter contains Nitrogen (N), Phosphorus (P) and Potassium (K), which are the required nutrients for the healthy growing of crops. As all these nutrients are preserved during the fermentation process, bio-slurry can be used as ready-made manure.

Bio-slurry is odourless, is pathogen free and does not attract flies; it repels termites and other pests that normally are attracted to raw dung. The process in the biogas digester kills organisms which can cause plant diseases and can be applied to vegetables or fruit crops. Bio-slurry is an excellent soil conditioner; it adds humus and enhances the soil’s capacity to retain water.

Research and promotion

The Tanzania Domestic Biogas Programme is promoting the use of bio-slurry to existing and new biogas users. The use of bio-slurry is a substantial additional benefit to many farmers, with remarkable increase in crop yields and the possibility to grow crops and vegetables without the use of pesticides.

The programme has employed a special bio-slurry officer, who coordinates the promotion, training to farmers and research. In all areas where the TDBP has constructed biogas plants, staff of partner organisations has been trained on the benefits of slurry use and composting.

On national level, partnerships were initiated with researchers from the Sokoine University of Agriculture and the Tanzania Organic Agriculture Movement (TOAM), which resulted in more knowledge and information exchange on the benefits of bio-slurry use.
The many uses of bio-slurry – experience from farmers

The promotional activities of bio-slurry use in the areas where the TDBP works together with her partner organisations, has started to bear fruits. Through information exchange with other countries in which SNV has biogas programs, the Tanzanian program has substantially contributed to the knowledge of bio-slurry use. In Tanzania bio-slurry use has expanded from ‘traditional farm use’ to applications in banana cultivation, coffee growing, vegetable production and fish farming. It has also been introduced as an organic pesticide. It benefits greatly soil fertility and composting bio-slurry with crop residues has resulted in substantial increase in crop yields. Below some examples are given of successful use of bio-slurry.

**Slurry as pesticide in banana cultivation**

Godwin Godfrey has a small banana plantation on the slopes of Mount Meru, near the town of Arusha. In the last years his production declined due to a weevil infection that affects the overall health of the banana plant and caused a serious drop in production. After attending training on the use of bio-slurry he started to apply 40 litres of bio-slurry to each banana plant. After a few months the weevil infection had disappeared and his banana crop tripled. As an added bonus the size of his banana has increased tremendously.

**Growing vegetables commercially**

Rhoda Mshomi grows vegetables on her own small holding on the slopes of Mount Kilimanjaro. Over the years she has invested in a drip irrigation system and a borehole. She grows mainly tomatoes and other vegetables, such as Chinese cabbage. In the past she used to apply chemical fertilizers and pesticides, but since she has started to use bio-slurry this is no longer necessary. Her tomato crop has now a much longer crop yield and by spraying slurry on the tomato plants she has also been able to control fungal pests.

**Bio-slurry increases yields in fish farming**

Raphael Chinolo is an innovative farmer in Chamkoroma village in Dodoma region. Raphael practices conservation farming and has also a woodlot with many beehives. Keeping records of his various trials is his hobby. After being told that the slurry from his bio-digester could be used for feeding his fish ponds he started to experiment with one pond first, out of the three ponds he has. The other 2 ponds were fed with chicken manure or maize meal. Mr Chinolo’s records showed that the increase in size of the fish fed on slurry was comparable with the sole feeding of expensive maize meal.

**Use in commercial onion cultivation**

Onions are a lucrative cash crop in Tanzania and often exported to neighbouring countries. Mr Kabuka is a farmer of the southern region of Ruvuma and is growing onions and fruit trees. The type of soil is clayish and not ideal for onion cultivation. The farmer has used bio-slurry in all forms; he dug in dried slurry into soil before cultivation, applied slurry directly to the seedbed and plants. He also uses fermented slurry as biological spray to stop insect pests. Since he started to use bio-slurry he has been astonished by an increase in yields by 75% and no longer needs to buy other inputs such as fertilizer and pesticide.

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