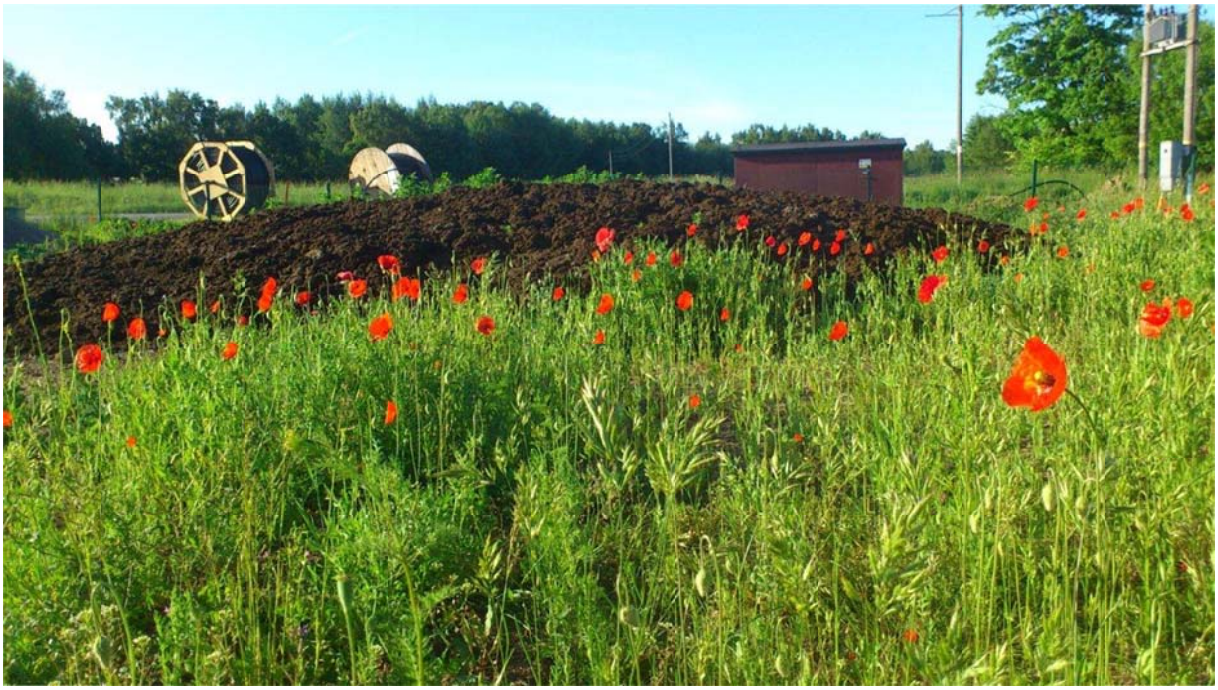
Part-financed by the European Union
(European Regional Development Fund)

Hygenisation of sludge

Östra Göinge Kommun

Hygenisation of sludge.

A report on an organic sludge field study in Hanaskog, Östra Göinge municipality, Sweden.



If you have any questions concerning this field study please contact:

Tor Carlson
Consultant
Tel. +46 70 5645289
Email: tor@mmkonsult.se
www.mmkonsult.se

Jonna Hiltunen
Operating technician
Tel. +46 70 9536297
Email: Jonna.Hiltunen@ostragoinge.se
www.ostragoinge.se

Contents

Hygenisation of sludge.

A report on an organic sludge field study in Hanaskog, Östra Göinge municipality, Sweden.

Summary
The results from this field study shows that a significant reduction of the microorganisms tested can be achieved by long term storage (6-8 months) of sludge.

Introduction
A field study on organic sludge was conducted at the old water treatment site in Hanaskog, Östra Göinge municipality, Sweden. The objective of the test was to quantify the long term storage effect (> 6 months) on certain microorganisms.
Organic sludge from both Broby and Knislinge sewage treatment plants were used in these field trials.

Materials and methods

General information
The field study started in September 2012 and was concluded in June 2013.

Three subsets of sludge were used from each of the treatment plants. Each subset was sampled before it was mixed and stacked with the rest of the sludge (for sampling technique see below).
Samples were then taken with two months intervals starting with a 0-sample (initial sample) at the start of the test period (see table 1).

The microorganisms tested can be seen in table 1.

Sample ID	Date/period sampled	Microorganisms tested
Broby 1, 2, 3 Knislinge 1, 2, 3	September 2012	*Salmonella* spp, *Enterococcus,* *E. coli* (O157)
Hanaskog “0”	2012-10-10	*Salmonella* spp, *Enterococcus,* *E. coli* (O157)
Hanaskog 1	2012-12-07	*Salmonella* spp, *Enterococcus,* *E. coli* (O157)
Hanaskog 2	2013-02-04	*Salmonella* spp, *Enterococcus,* *E. coli* (O157)
Hanaskog 3	2013-04-05	*Salmonella* spp, *Enterococcus,* *E. coli* (O157)
Hanaskog 4	2013-06-05	*Salmonella* spp, *Enterococcus,* *E. coli* (O157)

Table 1: Sampling matrix

Materials used

The following materials were used during this study.

- Carlson-Hiltunen sludge sampler.
- 2 wooden footbridges for getting the samples.
- Bucket for collecting and mixing samples.
- Power drill with a mixing staff for mixing samples.
- Sample canisters.
- Insulated bag (cool bag).
- Ice packs.

Sampling technique

All equipment were thoroughly cleaned before using.

Samples were taken randomly over the stack. By using the wooden footbridges it was possible to move to any place on the stack easily without disturbing the stack.

1. A minimum of 25 subsamples were taken randomly over the stack at a minimum depth of 30 centimeters (no sampling at the edges). At least 8 subsamples were taken to maximum depth (approx. 1 meter). At least 5 kg of material were taken out.
2. The subsamples were gathered in a bucket and mixed thoroughly for 3 minutes with a power drill and an attached mixing staff.
3. Approximately 500 grams of sample were taken out for a final sample and put in a sample canister.
4. The sample was then put in an insulated bag with icepacks for further transportation to the laboratory.
   The laboratory used in this study was the Swedish Institute for Communicable Disease Control (Svenska Smittskyddsinstitutet)

Results

The results of the field study are shown in table 2.

Fieldtest Hanaskog - Results

	Broby				Knislinge				"0"	2 mon	4 mon	6 mon	8 mon
Laboratory date	*121003*	*121010*	*121013*		*121003*	*121010*	*121013*		*121016*	*121201*	*130204*	*130415*	*130605*
E.Coli cfu/g	18000	210000	150000		10000	40000	160000		35000	200	2200	<100	<100
Intest enterokocker 35°C cfu/g	15000	260000	270000		9100	62000	72000		59000	820	57000	2000	450
Salmonella species cfu/g	D	D	ND		ND	ND	ND		D	D	D	ND	ND

D = Detected
ND = Not Detected

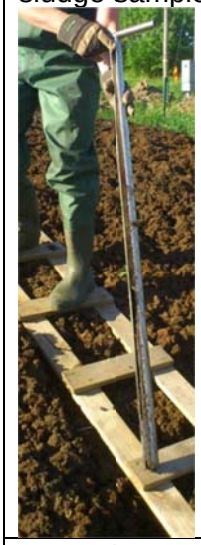
Table 2: Results

Discussion

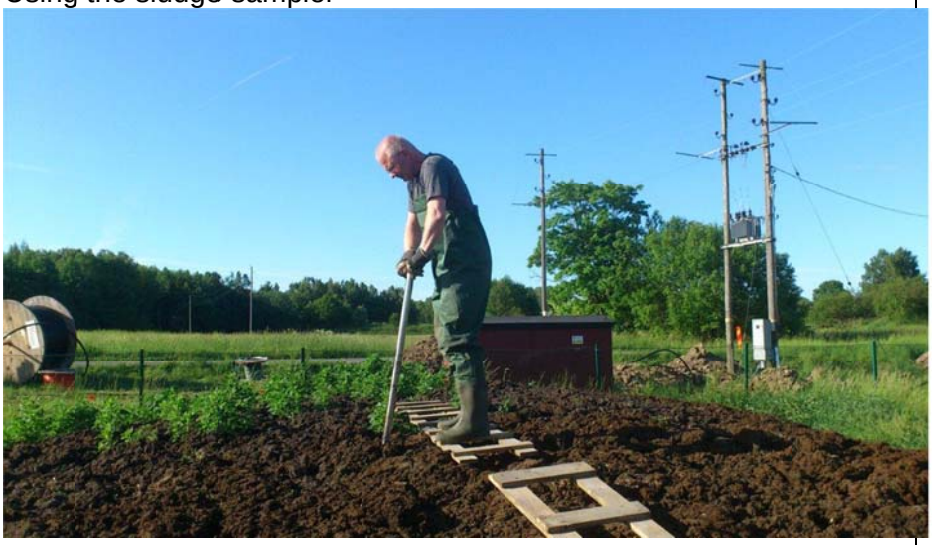
The results from this field study shows that a significant reduction of the microorganisms tested can be achieved by long term storage (6-8 months) of sludge.

Photo appendix

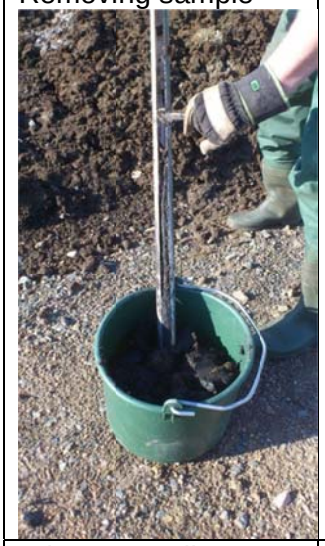
Carlson-Hiltunen sludge sampler



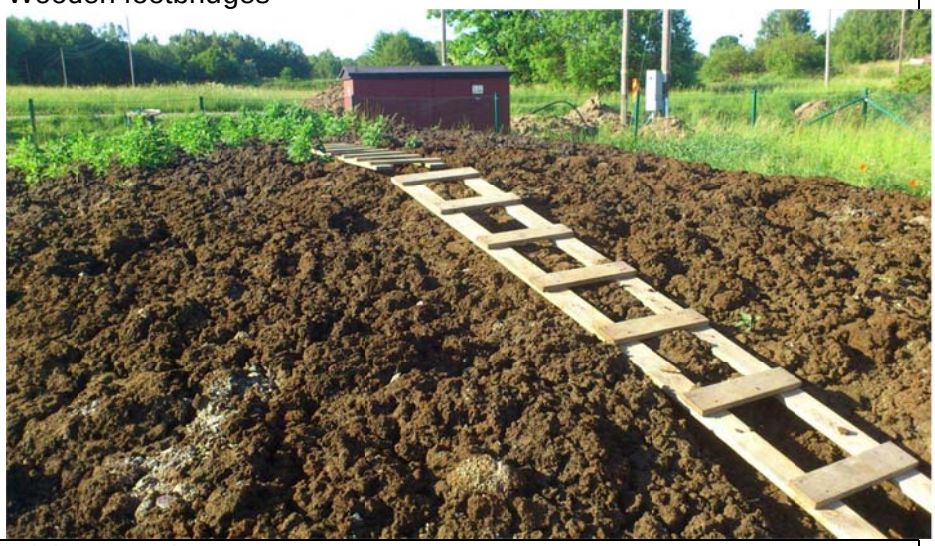
Using the sludge sampler



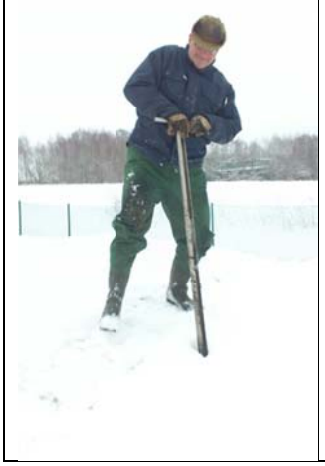
Removing sample



Wooden footbridges



Winter sampling



Mixing samples