

CASE STUDY # 056

BIOTREATMENT OF ORGANIC WET FRACTION (OWF) OF SEPARATED WASTE TO SUPPRESS ODORS

SUBJECT: Reduction of odors from waste fractions after separation through Biotreatment.

PRODUCT APPLIED: **MICROCAT-ANL Microbial Odor Control Bioformula**
MICROCAT-CC Composting Bioformula



OBJECTIVE

To verify if the products MICROCAT-CC and MICROCAT-ANL are suitable to be used as odor eliminators on the organic wet fraction (OWF) of waste that is dumped. Also potential side effects are monitored. Duration of the trial: 23-03-2000 to 10-04-2000

TRIAL SETUP

Two trials have been performed with the products MICROCAT-CC and MICROCAT-ANL. During the trials an internal odor panel of three persons is used to determine the odors, all members of this panel are certified.

Two trial setups are made:

Setup I:

Trial 1 (simulation of dump "small")

For this trial mini-compostingreactors are used (2 reactors of 100 liter each), both reactors are filled with fresh OWF. Reactor A is humidified with water, reactor B is humidified with a MICROCAT-product solution. Volumes in both reactors are equal. Reactors are sealed. Aeration is turned off during the trial period, the aeration is only turned on when the odor panel comes to detect the odor.

Trial 2 (composting simulation)

For this trial mini-compostingreactors are used (2 reactors of 100 liter each), both reactors are filled with fresh OWF. Reactor A is humidified with water, reactor B is humidified with a MICROCAT-product solution. Volumes in both reactors are equal. Reactors are sealed. Aeration functioned as during normal composting processes.

Setup II:

Trial 2 (simulation of dump “large”)

For this trial two containers (volume of about 2 m³) are used. Container A is filled with fresh OWF and humidified with water. Container B is filled with fresh OWF and humidified with a MICROCAT-product solution. Volumes in container A and B are equal. No aeration took place during the residence time of the material in the containers. The containers are open on top. Because the containers are placed next to each other, a sample from both containers was taken and placed in pails in front of the containers. These samples were monitored by the odor panel.

Remark: the odor panel was not aware to which container the MICROCAT-products were added.

RESULTS:

Odor panel:

Setup II Containers of 2 m³

Container I contained the MICROCAT-products

Odor notation: - = no odor. + = odor

Date	container I	remark	container 2	remark
1	+	light ammonia odor	++	faint acid
2	-		++	faint acid
3	-	light ammonia odor	+	faint
4	-	light ammonia odor	+	faint

Setup I Trial I

100 liter reactors

Reactor 2 contained the MICROCAT-products

Odor notation: - = no odor. + = odor

Date	reactor 2	remark	reactor 1	remark
1	+	light ammonia odor	++	faint acid
2	-	forest odor	++	stench
3	-	forest odor	+	stench
4	-	forest odor	+	stench

Chemical analysis:

	DM in (%)	OM in (%dm)	DM out (%)	OM out (% dm)	remarks
Container 1	46	57	62	35	MICROCAT
Container 2	46	57	59	39	Control
Reactor 1	46	58	79	39	Control
Reactor 2	46	56	88	30	MICROCAT
	pH in	EC in (mS/cm)	pH out	EC out (mS/cm)	remark
Container 1	5.5	4.1	7.2	7.9	MICROCAT
Container 2	5.7	4.3	6.8	8.1	Control
Reactor 1	5.5	3.9	7.5	7.8	Control
Reactor 2	6.3	4.4	6.9	7.1	MICROCAT

DM = dry matter

OM = organic matter

EC = electro conductivity

	Reactor 1 (control)	Reactor 2 (MICROCAT)
Volume reduction	22%	25%
Weight reduction	55%	64%
OM degradation	19%	28%
Dry matter increase	42%	47%
Sieve Fraction < 10 mm	32%	48%
Stability (°C)	51	34
Average Temperature (°C)	43.9	49.5

CONCLUSIONS

The products have an odor reducing action that was already detectable after a few minutes. The products have an accelerating effect in the composting process, see chemical analysis.

RECOMMENDATIONS

The MICROCAT- products ANL and CC can be used on the following processes:

- Odor elimination of OWF that will be dumped.
- Odor elimination of OWF that will be composted
- Odor elimination of Green-waste, Fruit-waste and garden waste (further to be investigated)
- Odor elimination in biofilters (further to be investigated)
- Divers applications in wastewater purification