

**Product:**  
Penergetic-k

**User:**

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## User Application Report

**Date:**  
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# COMPOST TEST with and without Penergetic k

## Materials and methods

Test was done on two piles of manure as follows:

Pile 1: allowed to decompose based on conventional composting procedure

Pile 2: composed by conventional means with addition of Penergetic k (applied at 40 grams/m<sup>3</sup>)

Start date: July 10, 2004.

## Results

Days until completion of composting process

Pile 1: 80 days      Pile 2: 45 days

Parameters	Pile 1: Without Penergetic k	Pile 2: With Penergetic k
Organic matter (%)	47.7	71.2
Ash (5)	52.3	28.8
Carbon (%)	13.5	26.9
Total Nitrogen (%)	1.5	3.2
Relationship of C/N	9.0	12.2
Humic Acid	18.6	19.1
Fulvic Acids	2.3	7.7
CIC	60.8	65.5

## Biological Analysis

Fungi	Analysis of four samples – 3 untreated and 1 with Penergetic k			
	Untreated Samples			Treated Sample
	Sample A	Sample B	Sample C	Sample K
Aspergillus caespitosus ●	6	5	11	1
Aspergillus fumigatus ●	52	49	18	5
Aspergillus niger	-	25	-	27
Aspergillus terreus ●	2	-	-	-
Emericella nidulans ●	1	-	2	-
Fusarium nygamai (104) ●	5	9	-	-
Puccinia	5	1	-	-
Penicillium murabile ○	1	-	1	1
Gliocladium ○	-	1	-	2
Actinomyces ○	-	1	-	1
Trichoderma ○	-	1	1	5

*Note:* when tested at 25°C a significant presence of beneficial organisms (Gliocladium, Actinomyces and Trichoderma) was observed in the sample from the pile treated with Penergetic k and a low incidence of detrimental fungi (Aspergillus fumigatus).

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The fungi marked with the symbol “○” are beneficial for agricultural production. In particular, Gliocladium, Actinomyces and Trichoderma are favourable fungi (especially Trichoderma), which are often used to create natural fungicides as a means of avoiding or reducing the use of chemical products. The use of Penergetic k in treating compost promotes the favourable development of these fungi and stimulated their multiplication – thereby essentially offering the same benefits of a natural fungicide.

The fungi marked with symbol “●” are considered to be bad for agricultural production. In particular, Aspergillus fumigatus and Fusarium nygamai are two undesirable fungi, especially for field crops such as wheat and sunflowers. Aspergillus fumigatus is also unfavourable for human health and has been shown to be carcinogenic. When untreated compost is spread on the field a farmer runs the risk of spreading these harmful fungi to the crop, which are unhealthy for plants (and the soil) and lead to the application of fungicides. The absence or reduced incidence of these detrimental fungi in Penergetic k treated compost means land application with Penergetic compost significantly reduces the risk of introducing unfavourable fungi to the soil and crops.

The quantity of fungi shown in the table needs to be multiplied by 10<sup>4</sup> (or 10,000) in order to calculate the total quantity of colonies of that specific fungi identified in a given sample. For example, reference to “6” for Aspergillus coespitosus in Sample A: means that 60,000 units of this fungi were identified as alive and capable of creating more colonies of this (undesirable) fungi.

## Summary of Study Results

As evidenced by this study, the benefits of using Penergetic k in compost treatment include:

- Increase in organic matter content of compost
- greater carbon and total nitrogen content – due to less loss of ammonia to the air through volatilization during the composting process, as an aerobic (instead of an anaerobic) process is established
- higher Carbon to Nitrogen ratio
- accelerated and more complete composting process
- reduced odour emission during composting (as aerobic process prevents putrefaction)
- accelerated production of beneficial fungi – good for the soil regime (and plants)
- reduced risk of spreading fungi detrimental to crops when compost treated with Penergetic k is used

Penergetic k can also be applied in barns/stables to reduce insects, odours and start the decomposition process of spoiled bedding and animal wastes. Penergetic k may also be applied on fields: pre-harvest, post-harvest or prior to planting to activate soil nutrients, promote breakdown of dead/decaying matter and releases nutrients locked in the soil.