

## SCD Probiotics®

### Case Study Summary – SCD Bio Ag® used to accelerate composting time in Colombia

*Composting (CSS-022-2009)*

**Industry:** Composting  
**Application:** Product applied to compost material  
**Where:** Colombia  
**When:** July 2007  
**Product:** SCD Bio Ag®  
**Customer:** Oasis

### Background

Excellent changes in Colombia's existing agricultural conditions, from time of the composting process to transformation of organic matter, and some other important parameters were observed with SCD Probiotics application.

### Introduction

In 2007, researchers in Colombia tested SCD Bio Ag to determine the efficiency of the product in the composting process. The most important parameter was the total time composting, as well as parameters measuring the physicochemical and microbiological make up of the compost.

### Methodology

The materials used in the compost were cut grass, dry leaves, green branches, kitchen waste, and other sources like harvest remains (pulps, rinds, seeds, etc.). The tests were performed after all matter had completely decomposed.

The water requirements for the activation of SCD Bio Ag are outlined below.

Humidity of the raw material [%]	[L water : L SCD Bio Ag]	Dose of SCD Bio Ag [l/t material]
40 – 65	18:1	3
65 – 85	6:1	1



## Results

Results showed that the compost treated with SCD Bio Ag had a fast composting time of 35 days. Pathogens such as *E.coli* or Salmonella were not present in compost, and the heavy metals were under the limits of US Department of Agriculture Compost Heavy Metals Standards in the treated compost material.

It is known that the higher temperatures in the thermophilic range reduce the required retention time of compost. In the Colombia trial, the temperature was around 60°C on the 12<sup>th</sup> day, and the compost was ready to use on the 35<sup>th</sup> day.

DATE	DAY	OBSERVATIONS	TEMPERATURE
MAY 2, 2007	0	Formation of piles + first application	28°C
MAY 14, 2007	12	First turn around + second application	60°C (average)
MAY 26, 2007	24	Second turn around + no application	50°C (average)
JUNE 4, 2007	35	Product is ready	30°C (average)

The optimal pH levels for composting range from 7.0 to 8.0. The pH of the treated compost was 7.61. Physicochemical parameters such as density, moisture, electrical conductivity, and cationic capacity were found at desired values and denoted the quality of compost.

In general, the low C:N ratio (below 30:1) accelerates the rate of decomposition but may cause nitrogen loss leading to foul smelling conditions. The C:N ratio of the Bio Ag treated compost was 7:1 and without foul smelling, due to the help of beneficial microorganism's odor control efficiency.

The heavy metals measured in the compost were Cadmium which was at 4.9 ppm (limit is 10 ppm), Nickel at 53 ppm (limit is 200 ppm), Lead at 30 ppm (limit is 250 ppm), Copper at 119 ppm (limit is 1000 ppm) and Zinc at 40 ppm (limit is 2500 ppm), all under the limits of Standards.

For the parameters with SCD BioAg application to the compost, see the Table I on next page.

## Conclusion

It can be concluded that SCD Bio Ag is a good inoculant by reducing the time of composting process with a faster transformation of organic matter.



# TECHNICAL DOCUMENT

SCD Probiotics specializes in manufacturing all-natural probiotic products for human-health and environmental sustainability



Table I: The parameters with SCD BioAg application to the compost

PARAMETER	SCD Compost
Arsenic (ppm)	<1.0
Cadmium (ppm)	4.9
Nickel (ppm)	53
Lead (ppm)	30
Copper (ppm)	119
Manganese (ppm)	130
Zinc (ppm)	40
Appearance	Solid brown color
Total Available Nitrogen (N) mg/l	1.66
Total Available Phosphorous (P) mg/l	1.24
Total Available Potassium (K) mg/l	1.42
Total Organic Carbon (C) %	11.4
C/N Ratio	7:1
Total Organic Matter %	15.2
pH	7.61
Density (g/cm <sup>3</sup> )	0.8
Maximum moisture %	15.9
Water Holding Capacity %	82.9
Cationic Capacity Interchange (meq/100)	27.5
Ashes (700°C)	51.1
Volatile losses (%)	33.1
Electrical Conductivity (dS/m)	17.6
Total Sulphur (ppm)	0.38
Total Iron (ppm)	0.68
Total Sodium (ppm)	0.33
<i>Penicillium</i> spp.	2.0x10 <sup>4</sup> CFU/ml
<i>Actinomycetes</i>	7x10 <sup>6</sup> CFU/ml
<i>Gram positive bacteria</i>	9x10 <sup>5</sup> CFU/ml
<i>Gram negative bacteria</i>	1.8x10 <sup>7</sup> CFU/ml
<i>E. coli</i>	Absent
<i>Shigella</i>	Absent
<i>Salmonella</i>	Absent

