



## 1. Introduction

[Norfolk Rivers Trust](#) (NRT) and [Catchment Sensitive Farming](#) (CSF) recently hosted a bokashi composting workshop, with support from [Agriton Group](#), to share an ingenious practice that can boost soil health while reducing greenhouse gas emissions.

The value of soil is irreplaceable; it provides us with food, purifies our water, can protect us from extreme weather, and is even a source of life-saving medicines. However, despite the importance of this natural resource, the Food and Agriculture Organisation of the United Nations (FAO) estimates that 30 percent of the world's soils are degraded.

In addition to the urgent attention that soils require, the [NFU have set a target for Agriculture to achieve Net Zero by 2040](#). Increasing the organic matter content of soil will boost its overall health and increase the amount of carbon that it can store, while improving its water-holding capacity and resilience to extreme weather conditions.



Figure 1. Animal waste can be used in the bokashi process.



Figure 2. An established bokashi heap.

Bokashi composting is emerging as one of the most carbon-efficient methods of breaking down organic matter so that it can be applied to soil.

## 2. What is Bokashi?

Bokashi, the Japanese word for "well fermented organic matter", is the process of fermenting natural materials (livestock bedding and food/green waste) that may otherwise be discarded.

Regular composting requires aerobic decomposition, a process in which microbes feed upon organic matter in an oxygenated environment. This results in heat production and carbon dioxide release, leading to a reduction in the nutritional value of the organic material.

In contrast, bokashi composting uses anaerobic decomposition (a process where oxygen is not present). According to [Agriton](#), "this process retains almost all the energy and nutrients within the organic matter and makes it readily available to living organisms and roots in the soil."





### 3. Why Bokashi?

Bokashi composting has many benefits including:

- No heat is generated during the process, which can destroy useful microbes and produce poor soil supplements.
- Little carbon dioxide is released during decomposition.
- The microbes present in the process create vitamins and enzymes, in addition to disease, fungus and bacteria resistant microorganisms and compounds.
- The process is compatible with organic farming systems.



Figure 4. Bokashi creates an environment where microbes thrive.

	Starting material	Aerobic Compost	Anaerobic Compost
<b>Kg product</b>	13,400	5,070	13,870
<b>Dry Matter</b>	2,706.8	1,384.1	3,079.1
<b>Organic Matter</b>	2,130.6	1,384.1	2,080.5
<b>Carbon Total</b>	1,072.0	441.1	1,040.3
<b>Nitrogen Total</b>	48.2	43.6	52.7
<b>Nitrogen Mineral</b>	6.7	1.5	2.8
<b>Nitrogen Organic</b>	41.5	42.1	49.9
<b>C/N Ratio</b>	22:1	10:1	19:1
<b>pH</b>	7.3	7.9	7.1
<b>MJ Energy</b>	215.9	67.9	193.9

Figure 3. Anaerobic bokashi benefits. Credit: [Agriton Guide](#).

### 4. The Recipe: How to create a bokashi heap

During the event, Agriton demonstrated that the process requires waste organic matter to be mixed with the following additives:

- **Effective Microorganisms (EM)** – the microbes dominate the organic matter to ensure anaerobic decomposition occurs.
- **Ægir Seashell** – to maintain a neutral pH, thus creating an environment in which all microbes can exist.
- **Edasil Clay** – to act as a nutrient binder, ensuring that all nutrients released by the microbes are captured and made available when applied to the soil.

Once this is done, the mix will need to be ensiled (stored) for at least 6–8 weeks before it is ready for soil application.

Complete recipes for small, medium and large heaps have been developed by Agriton over many years and can be found [here](#).

### Funding Statement

This workshop was supported with funding from the **Carlsberg and WWF partnership**. Through the partnership’s funding support, Norfolk Rivers Trust is holding farmer and landowner knowledge-sharing events, along with providing advice and grants to implement water sensitive farming measures. With thanks to Andrew Sincock and Agriton for offering their training services.