

Summer Research Program 2011/2012

Project Title: Production of soil carbon granules for seed drilling

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Objective

This project will investigate the production of small hard granules of brown coal-based material to be used as an organic soil amendment/fertilizer. The project will study the granulation process and the properties of the granules produced.



Description

Organic fertilizers made from char or coal are claimed to provide many benefits to the soil, over and above their inherent fertilizer value (C:N:P ratio). In particular, soil carbon provides a soil ecosystem that encourages root growth, which ultimately leads to further increases in carbon (and thus provides a mechanism for carbon geo-sequestration). Ideally, the carbon would be applied directly below each seed as part of an automated sowing system known as Seed-Drilling. However, in order to be suitable for drilling, the granule needs to be strong. This project is therefore directed at making strong hard granules from a soft friable material like brown coal.

The project will involve an experimental study of granulation in a ribbon blender or other small-scale mixing device. The parameters that will be studied are:-

1. Coal initial moisture content
2. Added water
3. Binding materials
4. Mixing speed and mixer design

The granules produced will be sized and their strength will be measured.

Coal-based granules	Field trial – Untreated (8cm)	Field trial – Treated (25cm)
 <p>Particle Size < 5.6mm</p> <p>Pallet Sized – Desired Product Dense materials Low in moisture content (10 to 15%)</p>		

This project **may** provide the opportunity to collect some data at an industrial site.