

Biochar Methodology

Aim

To establish a field lab to investigate the effects of ingested biochar on beef cattle along the following parameters;

1. Ammonia emission from manure
2. Ammonium retention in manure
3. Manure dry matter
4. Manure pH
5. Cattle worm burden
6. Effect of biochar/manure on grass growth and other soil parameters.

Design

The triallist will split some of his beef cattle herd into groups of 5. The so called “Bio Team” group will be fed 300g per day, for 28 days, of the farmers own biochar (feedstock deciduous tree trimmings, and biochar crushed and sieved to fit through a 4mm sieve). The “Non Bio” team will have no change to their diet.

Measurement of ammonia emission

In order to establish natural ammonia emission levels prior to the experiment, the farmer will collect 3 x 500g pots of manure from different cows in each team - 6 pots total. This will be done every other day for a week to establish ammonia levels of the herd (rather than each cow). On day 1 of the experiment, the Bio team will each receive 300g of biochar in their trough. Three manure sample pots will continue to be collected from each team every other day. The researcher will collect these pots to bring back to the lab where they will be analysed.

Analysis

Manure samples will be analysed using a FOSS Fiastar continuous flow analyser to show ammonia emission levels, as well as levels of ammonium retained in the manure. In total 126 samples will be analysed. Percentage dry matter will be calculated along with pH, and a FECPAKG2 will be used to assess worm burden.

During April, a pot trial will be established to evaluate the effect of biochar/manure on rye grass growth at 2 application rates with non and bio manure. Dry weight of grass and different soil parameters will be monitored once a month until September.

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