To ensure that growers receive a consistent quality compost, the composting process must be adapted to suit the straw quality, for example by increasing or decreasing the number of days spent in the bunker or by changing the ingredients. For example, cornstovers could be added to straw with a low hemicellulose content to correct this. The differences in straw quality are mainly caused by conditions during the growing season, e.g. dry or wet weather, irrigating or not, plentiful or little sunshine. But the type of straw, varieties, N dressings and soil type all contribute too.

Water plays an essential role throughout the composting process and mushroom growing. The compost must contain enough bound water to enable micro-organisms and mycelium to break down nutrients and absorb nutrients through exo-enzymes. The amount of water that a certain type of straw can absorb, and the absorption rate, can be predicted using the figures WAC24 and WAC5.

The further apart the WAC5 and WAC24, the slower water will be absorbed and the longer the pre-wet period must be. Compared with wheat straw, other straw types (e.g. rice straw) can absorb water quickly but in a lower total volume. Creating good quality compost from rice straw is not easy. Straw with a high crude fat content normally has a thicker waxy layer which slows down the water absorption rate and also how fast the micro-organisms can decompose the straw. This means that a longer pre-wet period and composting at about 50°C is necessary.

Structure and resistance are used to predict the volume of the compost. Volume is important to ensure there is enough oxygen in the compost. This oxygen is vital for activity in the process and to prevent the formation of anaerobic patches. Data on the expected volume weight of the compost is useful in connection with filling the bunkers and tunnels evenly and homogenously.

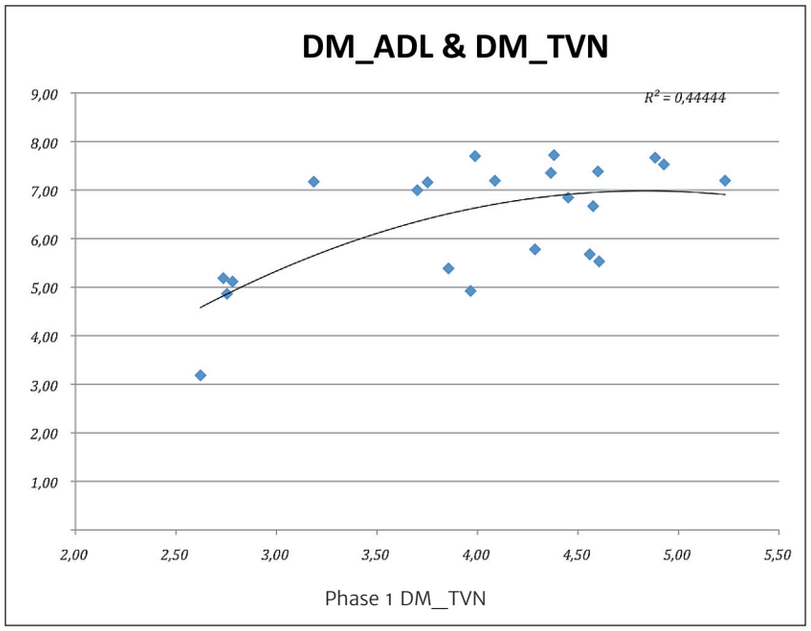
More data, more insight

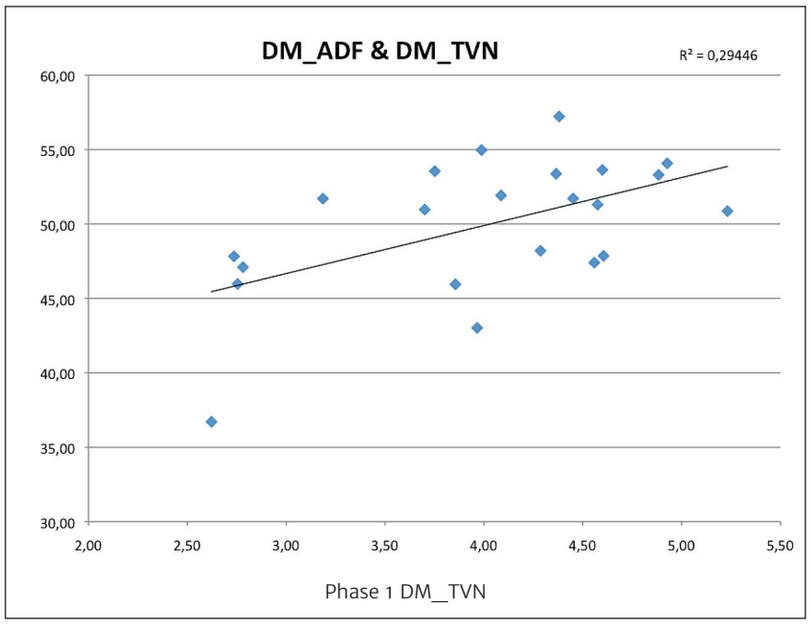
High investments are made in mushroom growing to optimise the production process. However, the quality of the raw materials used to produce compost are highly variable. To ensure a uniform and consistent finished phase III or spawnable compost, it is valuable to perform as much analysis as possible. This data gives more insight into the variation in raw materials and their impact on quality.

The NIR calibration lines of MCSubstradd currently provide the most information on these parameters and are a very affordable option. Total Volatile Nitrogen is used to measure compost activity. If the compost is more active, more conversion will take place and the TVN will be higher. Graph 1 shows the correlation between the TVN phase I and the bio efficiency of the compost. Active compost during phase I gives a better compost.

Straw quality is determined by multiple factors, so it is no simple matter to say exactly what 'good' or 'bad' straw is. Each type of straw needs to be treated differently.

To know how to do this, you need to know the precise profile of the straw, so that a homogeneous and consistent product can be supplied to mushroom growers.





Graphs 2 and 3 show the correlation between TVN phase I and ADF (Acid Detergent Fibre) and lignin in the straw. Straw with more structural carbohydrates such as cellulose and lignin creates phase I compost which absorbs water better, has more structure, a higher nutritional value and is therefore more active.