

Analytical determination of crude fibre in animal feed

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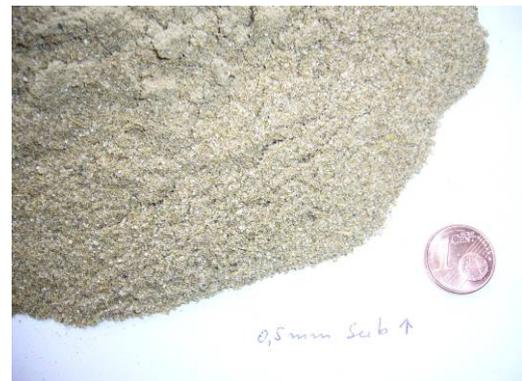
Even animal feed is sold with a declaration about its contents. For quality assurance those substances of contents are continually examined.



When screening this concrete task, cereal for horses is to be analysed here. Especially critical and subject to errors can be the content of crude fibres. With an ultra-modern instrument by Gerhardt this analysis is performed. Modern analysers are characterized by the reduced use of chemicals and optimized timing.

Approximately 1 g of the weighted sample of the to be analysed material is to be added to the analytical instrument. The batch size is so large, that at least a mixed sample of 1 kg cereal has to be comminuted. When viewing the single components in the photo, then the sorted out pellet weighs 0.7 g, the yellow chunk 0.3 g, and the husk almost nothing. Crude fibres are concentrated especially in the husks. Therefore, with an insufficient comminution faulty analyses are bound to happen. The mistakes can't be ascribed to the analysis instrument, but rather to the inhomogeneous sample. An increase of the net weight is in opposition to the use of chemicals of acid and leach and the necessary times for the cooking process. Important is hence the production of a homogenous sample with the aid of the suitable laboratory mill.

For the one-step-comminution with only one instrument, various tests were conducted with the Variable-Speed Rotor Mill PULVERISETTE 14. It became clear, that as the finest sieve, the 0.5 mm sieve may be utilized, but the obtained fineness is not sufficient. Here clearly elongated remainders of the husks can be discerned. The solution is therefore a two-step comminution.



For the pre-comminution of larger amounts of cereal, we recommend a cutting mill. In consideration of the good cleaning possibilities for the contamination free preparation, the [Universal Cutting Mill PULVERISETTE 19](#) is selected. For the second step and therefore the fine comminution of a smaller mixed sample, the Variable-Speed Rotor Mill PULVERISETTE 14 is utilized. Allows a limited budget the investment in only one mill, with a greater expenditure of time, even larger sample amounts can be pre-comminuted in batches with a 2 mm sieve with a PULVERISETTE 14. The following tests were conducted in this manner.

A larger amount of the sample was initially pre-comminuted in several batches with the PULVERISETTE 14 with a 2 mm sieve and then again a subset amount was finely comminuted with the PULVERISETTE 14, but this time with a sieve with 0.2 mm mesh width.



Upper photo to the right: a glance into the opened collecting pan of the mill, the sample put through the 2 mm sieve. Visually the result is still clearly inhomogeneous. For the creation of a smaller mixed sample, for the second step of the comminution, by all means a sufficient mixing and exact sample division is to be kept in mind. For the division of the sample we recommend the [Rotary Cone Sample Divider LABORETTE 27](#).

Pictured in the bottom-left photo: the sample put through the 0.2 mm sieve. From the in this manner prepared sample, after mixing the sample for a crude fibre analysis, a representative sample of 1 g can be drawn.



Provided, that the Universal Cutting Mill PULVERISETTE 19 is available, or larger numbers of samples are constantly processed, it is by all means recommended, that the larger amount is pre-comminuted with the cutting mill; and after sample division, the obtained smaller amount is finely comminuted with the Variable-Speed Rotor Mill PULVERISETTE 14.