

of grasses at successive stages of growth with reference to their partition into crude fibre and nitrogen-free extract according to the standard method for feeding stuff.

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The relative digestibility of the constituents of the carbohydrate complex of grasses at successive stages of growth with reference to their partition into crude fibre and nitrogen-free extract according to the standard method for feeding stuff analysis.

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Abstract : With material from earlier digestibility trials a study was made of the individual cell wall constituents of grasses as affected by stage of maturity. The grass samples comprised a mixture of veld grasses growing under the prevailing conditions of the summer rainfall area in S. Africa and were cut after periods of 4 months' undisturbed growth. In these and in the faeces from sheep constituting their sole food estimations were made of cellulose, lignin, total furfural yield, cellulose, uronic acid anhydrides, pentosans, hemicelluloses, cold-water soluble crude protein, ether extract and total ash as well as the amount and composition of crude fibre in the grass and faeces. The hemicelluloses were taken as the sum of uronic anhydrides and pentosans and the true cellulose as natural cellulose obtained from it. With increasing maturity of the grass its percentage of natural cellulose and ratio of xylan to true cellulose increased slightly. The increase in the lignin content was relatively small. The same was true for the hemicelluloses.

The digestibility trials showed the true cellulose to be the most digestible and lignin the least digestible of the cell wall constituents but both they and indeed all the other constituents showed decreasing digestibility with advancing maturity. The digestibility of the hemicelluloses lay between the values for true cellulose and lignin, being lower than that of true cellulose.

Examination of the crude fibre as isolated from the grass or from the faeces showed that on an average, the material from grass consisted of natural cellulose to the extent of 92.8 per cent., the remainder consisting mainly of lignin. The material from faeces consisted of 92.8 per cent. of natural cellulose and about 10 per cent. of lignin.

It would appear that the various constituents of the cell wall structure show a marked resistance to the reagents used in the Weende process for estimating fibre amounts of these constituents recovered in the crude fibre show considerable differences. From 86 to 93 per cent. of the true cellulose, 33 to 40 per cent. of the xylan and 15 per cent. of the lignin and only about 1 to 4 per cent. of the pentosan and hemicellulose were recovered. The need for an improved system of analysis is stressed. Godden.

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Anglophone Africa, Africa, Commonwealth of Nations, Developing Countries, So
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