

Micorbial colonization and digestion of feed materials in cattle and buffaloes I. guinea grass

ABSTRACT

An experiment was conducted to determine whether there were any apparent differences in the microbial population, colonization pattern and digestion of guinea grass in situ, between cattle and swamp buffalo. Percentage losses in dry matter (DM), nitrogen (N) and neutral detergent fibre (NDF) of guinea grass were significantly ($p < 0.01$) higher when incubated in the rumen of buffalo than in cattle. Buffalo also showed significantly ($p < 0.05$) faster degradation rates than cattle for each grass component (DM, N, DNF). Light microscopy and SEM examination of the incubated grass materials showed that there were no apparent differences in the pattern of bacterial and fungal invasion and colonization of the grass materials between cattle and buffalo. Attachment of bacteria and fungal zoospores on the grass fragments occurred at 15 min after rumen incubation. After 3 h of rumen incubation, dense population of bacteria was observed in the thin-walled mesophyll and parenchyma tissues, whereas root-like fungal rhizoids were observed in both thin-walled and thick-walled cells. By 6 h, eroded zones were apparent in the thin-walled tissues and in thick-walled tissues with profuse rhizoids. After 24, 48 and 72 h of rumen incubation, most thin-walled tissues were degraded leaving mostly the thick-walled tissues. The predominant bacteria were the curved rods resembling *Butyrivibrio* sp., the thick rods resembling *Fibrobacter* sp., the diplococci resembling *Ruminococcus* sp. and spirochetes. Fungi were predominantly those with spherical or oval sporangia. Fusiform sporangia with acuminate apices which resembled *Ruminomyces* sp. were of lesser occurrence. Few protozoa were found on the grass fragments at all incubation times.

Keyword: Rumen microbes; Degradation of grass; Degradation rates; Cattle; Buffaloes