

PRT : EXECUTIVE SUMMARY

PROJECT ID 2607

**TITLE: RUMEN DEGRADABILITY OF CARBOHYDRATES IN SOUTH
AFRICAN FEEDSTUFFS FOR RUMINANTS**

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1. AIM:

The aim is to develop and establish a data base regarding the rate and extent of rumen degradability of carbohydrates that will be available for microbial protein synthesis in feed sources generally used in ruminal diets in South Africa.

2. BACKGROUND:

The chemical characterization of feed carbohydrates into various fractions alone is insufficient to provide quantitative information about the nutrients that will become available for milk production. More information is required concerning rate and extent of digestion in the various compartments of the digestive tract in order to predict the amount and type of nutrients made available for maintenance and/or milk production. Information on rumen degradation characteristics is therefore essential. A data base for rumen degradability of crude protein in 50 South African feedstuffs has

already been established, and information from the data base is being used by feed companies and nutritionists in the formulation of dairy cattle diets. However, additional information concerning the rate and extent of carbohydrate degradation in the rumen is required for the prediction of rumen microbial protein synthesis. Since rumen microbes utilize energy, as well as nitrogen for microbial protein synthesis, a knowledge of degradability characteristics of both the energy and crude protein fractions in feed sources is required for the formulation of diets resulting in optimal nutrient utilization. Increasing microbial growth efficiency by 10% will potentially result in an additional 7500 tonnes of microbial protein being produced annually from commercial total mixed rations in SOUTH AFRICA. This can be equated to a potential saving in oilcake of 17800 tonnes, valued at approximately R17 Million per annum.

3. **METHODS:**

The material and methods have remained unchanged as stipulated in the project proposal.

4. **PROGRESS:**

This project was taken over from Dr C W Cruywagen in November 1995. Due to the feedstuffs being milled incorrectly, the project only commenced late in November 1995. The *in situ* incubations for maize meal (5 mm sieve), hominy chop, defatted maize germ meal, sorghum, oats, barley, wheat, triticale, wheat middlings, maize silage, toasted wheat, toasted barley, micronized maize, gluten feed, maize gluten, maize middlings, wheat middlings (more starch), maize (broken) and maize (2 mm sieve) have been completed. All samples have been sent to the laboratory for DM, N, NDF and TNC analyses. Some delays are still encountered with the TNC analysis. The results for maize meal (5 mm sieve), hominy chop, sorghum and oats are available and the effective rumen protein degradability (ERPD) as well as the DM degradability have been calculated. The results all seem to be in line with data reported in the literature.