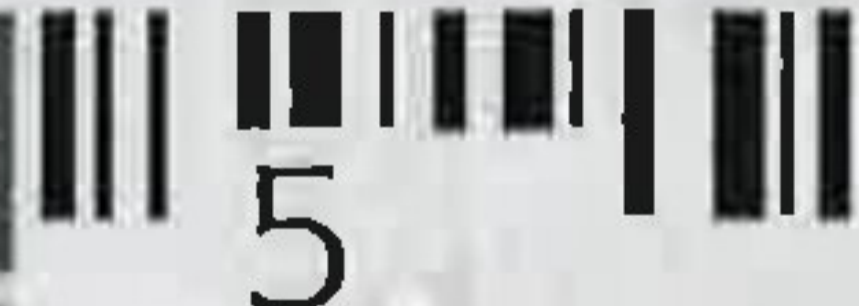


# Analytical Techniques in Animal Nutrition Research

**T.M. PRABHU**  
**K. CHANDRAPAL SINGH**



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different locations. There is no claim made for originality in the essential and basic subject matter, but approach to the demonstration and performing of various research methodologies, its manner of treatment and presentation is entirely based on our own experiences.

We wish to place on record our indebtedness to Prof. Suresh, S. Honnappagol, the Vice-Chancellor, Dr.S.Yathiraj, Dr. M.S. Vasanth, Dean and Dr. U. Krishnamoorthy, Head, Division of Animal Science, KVAFSU, Bidar for their encouragement. The assistance and support of the publisher is most gratefully acknowledged.

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## Chapter 1

### CHEMICAL ANALYSIS

The chemical composition and digestibility of feedstuffs influence their nutritive value for animal production. Therefore, assessment of nutritive value of feedstuffs continues to be one of the top priority areas in animal production research. Although traditionally the feedstuffs were evaluated by performance studies and digestion trials, such techniques are expensive and requires more time and labour. Continued search for alternatives to animal feeding experiments have led to the development of feed evaluation systems that are rapid and economical.

In general, there are two kinds of laboratory analyses – Chemical analyses and Biological tests with rumen micro-organisms or purified enzymes. Biological tests give direct estimates of digestibility, but are lengthier and more expensive. Chemical analyses are cheaper and rapid, but do not give direct estimates of nutritive value. The statistical association between the chemical components and quality need to be established to predict the nutritive value.

#### 1.1 Proximate Analysis

This is the conventional system that has been in use for more than 140 years. In this system, the feed components are classified into six groups called proximate principles. They are water, ether extract, crude fibre, crude protein, total ash and nitrogen free extractives (NFE). It consists of the following steps:

- A. Determination of water by drying at 100°C and obtaining dry residue,
- B. Ether extraction of the dry residue for estimation of lipids,

# Analytical Techniques in Animal Nutrition Research



Analysis of rumen liquor for fraction of VFA's enzymatic activity of various metabolites and estimation of rumen fluid volume and its flow rate are covered in depth. It was followed by estimation of anti-nutritional / toxic factors in various un-conventional feeds using HPLC / Spectrophotometer, detail analysis of milk and body condition scoring for dairy cattle are included as assessment of these parameters are important in Ruminant Nutrition Research.

Necessary practical work is included; the exhaustive details have been avoided, since the manual is primarily meant for postgraduate scholars, teachers, scientists and feed industry personnel use.

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## Chapters at a glance

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