Evaluation of unripen jackfruit silage for sustainable livestock production through in vitro studies

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Abstract
An experiment was conducted to assess the nutritional values of unripen jackfruit silage (UJFS) by in vitro techniques. In vitro dry matter digestibility (per cent), NDF digestibility (per cent), corrected net gas (ml/200mg DM) produced during 24 h incubation period and the ME (MJ/kg DM) content predicted from rumen in vitro gas production technique of UJFS was 91.89, 68.79, 65.51 and 11.81, respectively. From the current experiment it was inferred that unripen jackfruit silage can be utilized as an unconventional feed in the diet of ruminants.

Keywords: Unripen jackfruit silage, in vitro technique, dry matter digestibility and unconventional feed

Introduction
Under the prevailing climate change situations, exploration and evaluation of alternate newer feed resources and their efficient utilization should be continual process to overcome the problem of feed scarcity. Jackfruit is an important underutilized fruit of the tropics being native of India and widely cultivated in states of Karnataka, Kerala, Andhra Pradesh, Tamil Nadu, Maharashtra, Orissa, West Bengal, Goa and Assam. Utilization of such an underutilized fruit as unconventional feedstuff and assessment of nutritive value of the same will help to reduce the gap between the demand and supply of nutrients to livestock.

Methodology
Locally available unripen jackfruit (UJF) was procured and chopped into 1-3 inches. This was subjected to drying under the sun for 2 days to achieve 65-70% of its moisture content. Later, it was compactly filled into a 25 liter capacity plastic bottle manually in the laboratory. This was unsealed after 2 months and subjected for drying under the sun for 2 days to achieve 65-70% of its moisture content. Later, it was compactly filled into a 25 liter capacity plastic bottle manually in the laboratory. This was unsealed after 2 months and subjected for drying under the sun for 2 days to achieve 65-70% of its moisture content.

Rumen fluid for the study was collected at early morning before feeding roughage from HF crossbred lactating dairy cow fitted with a flexible rumen cannula of larger diameter (Bar Diamond, Inc. USA). Nitrogen fractionation was determined by acid detergent enzyme (Krishnamoorthy et al., 1983) [2], IVMD (in vitro dry matter digestibility) or TDMD (True dry matter digestibility) and NDFD (NDF digestibility) were estimated by modified in vitro two stage digestion technique.

Results
The corrected net gas (ml/200 mg DM) produced during 24 hour incubation period and the ME (MJ/kg DM) content predicted from rumen in vitro gas production of UJRS was 65.51 and 11.81, respectively. Comparable ME values of UJF silage with that of compounded feeds, promotes it as a potential feed for livestock especially during drought periods. Acid detergent insoluble nitrogen (ADIN), buffer insoluble nitrogen (BIN) and protease insoluble nitrogen (PIN) values were 22.48%, 45.61 % and 32.21% of total N, respectively. In vitro dry matter digestibility (IVDMD) or TDMD (True dry matter digestibility) estimated from modified in vitro two stage digestion technique and NDF digestibility was found to be 87.42% and 51.91%, respectively. These results are comparable with sugar beet leaves (81.9% TDMD) as well as pea pods (82.3% TDMD). Arun et al. (2020) [1] reported in vitro dry matter
digestibility (IVDMD) or true dry matter digestibility (TDMD) of 83.75 and 87.42, NDF digestibility (NDFD) of 59.96 and 51.91, respectively for jackfruit residue and jackfruit residue silage. Similarly they also observed non significant differences among nitrogen fractionations. Results further indicates that unripen jackfruit silage can be effectively be utilized for better production especially in younger small ruminants.

Conclusion
The present study was showed that unripen jackfruit can be successfully ensiled and stored for long. That apart, it has a potential nutritive value and hence can be included in the diet of livestock especially during scarcity period.

References