

102C. 6) UTILIZATION OF CRUDE GLYCEROL OBTAINED IN BIODIESEL PRODUCTION AS AN ALTERNATE TO GLYCOGENIC FEED SUPPLEMENT FOR DAIRY COWS (KSCST & ICAR-NDRI COLLABORATIVE PROJECT)

Principal Investigator : Dr. Bandla Srinivasa
Co – Investigator : S. N. Sondur
Budget : Rs. 55.58 lakhs
Funded by : DST, GoI

In collaboration ICAR's National Dairy Research Institute (NDRI), Southern Regional Station (SRS), KSCST had submitted a Project proposal on "Utilization of crude glycerol obtained in biodiesel production as an alternate to glyco-genic feed supplement for dairy cows" to Department of Science & Technology Government of India which was approved and sanctioned by the expert committee during May 2017. The project was sanctioned a total budget of Rs. 55.58 Lakhs for a duration of three years. Dr. Bandla Srinivas, Principal Research Scientist NDRI is the Principal Investigator of the project and Mr. S.N. Sondur, Principal Scientific Officer, KSCST, is the Co-Investigator. The project is being carried out at NDRI Bengaluru and KSCST is providing the Technical and Administrative Support.

The main objective is to utilize the Glycerol, obtained as a by product during the production of Biodiesel from non edible oil seeds, in animal nutrition. This not only gives value addition to the by product but also provides additional source for cattle feed which is compulsory for better and healthy growth of milking cows.

Objectives:

1. To characterize and purify crude glycerol produced during Biodiesel production from Non Edible Oils Seeds (NEOS) viz., Pongamia, Jatropha, Neem, Mahua and Simarouba.
2. To analyze purity and toxic levels of glycerol for safer inclusion in dairy cows rations
3. To evaluate the safety level of crude glycerol and glycerol fortified concentrate *in vitro*
4. To evaluate supplementation of glycerol in mash or lick form on nutrient utilization, energy balance and milk production in cows
5. To disseminate the technology developed from the project and initiating a link between Stake holders mainly, the users in Dairy industries (Cattle feed),farmers and the producers such as Bioenergy Research, Information and Demonstration Centers of KSBDB, who are producing glycerol regularly as a byproduct and also the small enterprise.

Progress report: April to July 2018

Recruitment and Instruments

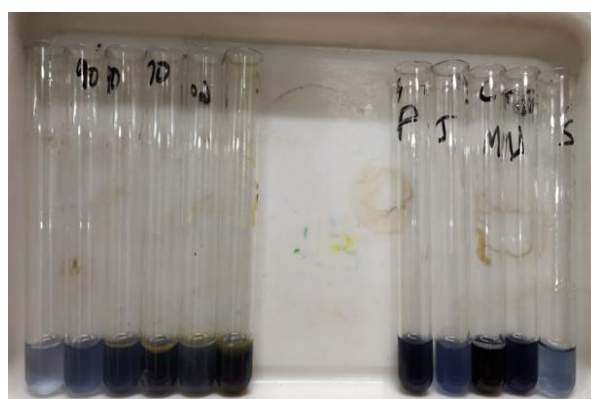
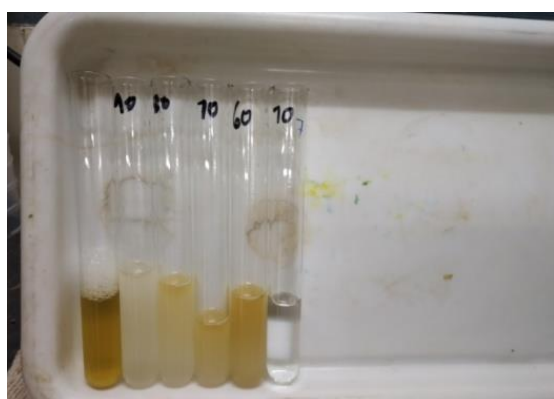
1. Recruitment of RA and JRF were advertised on 14/12/2017. Interviews were conducted on 27/12/2017 at ICAR-NDRI, Bangalore campus. RA and JRF were appointed and joined duties on 23/01/2018. The recruitment procedure of NDRI was followed.
2. Specifications for Transesterification unit and Atomic absorption spectrometer were compiled and procurement process has been E Tendering process.

Research work

1. Crude glycerol harvested from the biodiesel produced from non-edible oilseeds (NEOS) in lab scale unit and purified.
 - a. *Pongamiapinnata*
 - b. *Simaroubagluca*
 - c. *Azadirahctaindica*
 - d. *Madhucaindica*
 - e. *Jatropha curcus*(Under progress)
 - f. Waste cooking oil (Additionally tested)
2. Proximate composition of the NEOS and waste cooking oil were analysed
- 3.

Table 1: proximate composition of non-edible oilseeds

Sl No	Seeds	Moisture (%)	Dry matter (%)	N %	Crude protein %	EE%
1.	Pongamia	2.76	97.24	2.10	13.11	45.12
2.	Mahua	2.36	97.64	0.98	6.11	62.26
3.	Simarouba	1.15	98.85	1.818	11.33	76.34
4.	Neem	6.38	93.62	1.538	9.57	35.00
5.	Jatropha	1.5	98.5	2.09	13.03	40.38



Determination of Saponin and Tanin in Neem Glycerol and seed cakes of crude and purified glycerol 100, 90, 80, 70 and 60 %