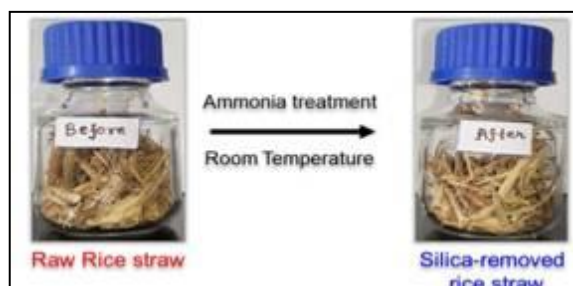


## Making rice straw a preferable fodder choice for domestic animals

By Dr. Bilqeesa Bhat

Leading scientist Dr. S. Saravanamurugan and Ms. Priyanka Pal at Center of Innovative and Applied Bioprocessing (CIAB), Mohali developed an efficient one-pot process to make rice straw a suitable animal feed choice and to completely eradicate stubble burning practices in agricultural fields in India. Adding value to rice straw will consequently help in increasing the farmer's income to some extent and to lower the pollution levels caused by indiscriminate burning of agricultural waste in fields.



Removal of silica from rice straw

Rice straw is one of the major agricultural residues available in abundance in India and it has remained underutilised fodder choice due to presence of high silica content it. Rice straw based feed causes adverse effect on digestibility of cattle or other domestic animals.

More than 500 million tons of waste from biomass is generated from various crops every year, of which 140 million tonnes is from rice straw only. Usually rice straw is burnt in the fields in India and other Asian countries as an inexpensive way to dispose the agricultural waste, and also to make the field ready for farming the next crops. Such outdoor burning practice leads to generating toxic air pollutants that affects human health badly.

The present study was conducted to address such problems. A one-pot protocol via chemical route employed ammonia-based solution to remove silica from rice straw in the form of ammonium silicate. The process also removed lignin from the rice straw which also limits the digestion of rice straw in the cattle. During the process, the rice straw is soaked in an aqueous

solution containing ammonia and kept in a shaking bath or under static conditions at a particular pretreatment temperature and time. After the treatment, the silica-removed rice straw was filtered off and washed with plenty of water and dried.

The amount of silica removed from rice straw was calculated based on treating rice straw at high temperature, and amount of lignin removed was calculated using spectrophotometer. Researchers have successfully removed about 45% of silica along with most lignin. However, the one-pot process developed needs further optimization for selective removal of silica and lignin.

**Contact details:**

Dr S. Saravanamurugan, Chief Executive Officer,  
E mail: [saravana@ciab.res.in](mailto:saravana@ciab.res.in); [ceo@ciab.res.in](mailto:ceo@ciab.res.in); Ph.: 91-172-5221514 (O),  
Center of Innovative and Applied Bioprocessing (CIAB),  
Sector-81, PO Manauli, S.A.S. Nagar, Mohali-140306, Punjab, India