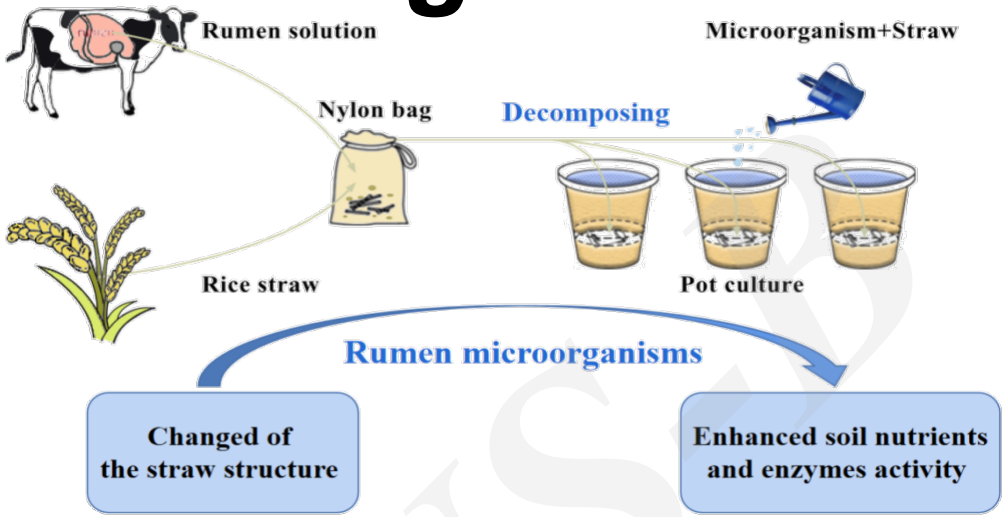
Cite this as: Kailun SONG, Zicheng ZHOU, Jinhai LENG, Songwen FANG, Chunhuo ZHOU, Guorong NI, Lichun KANG, Xin YIN. Effects of rumen microorganisms on the decomposition of recycled straw residue[J]. Journal of Zhejiang University Science B, 2023, 24(4): 336-344. http://doi.org/10.1631/jzus.B2200504

Effects of rumen microorganisms on the decomposition of recycled straw residue

Key words: Rumen microorganisms; Straw return; Microbial inoculant; Decomposed straw; Soil microorganisms

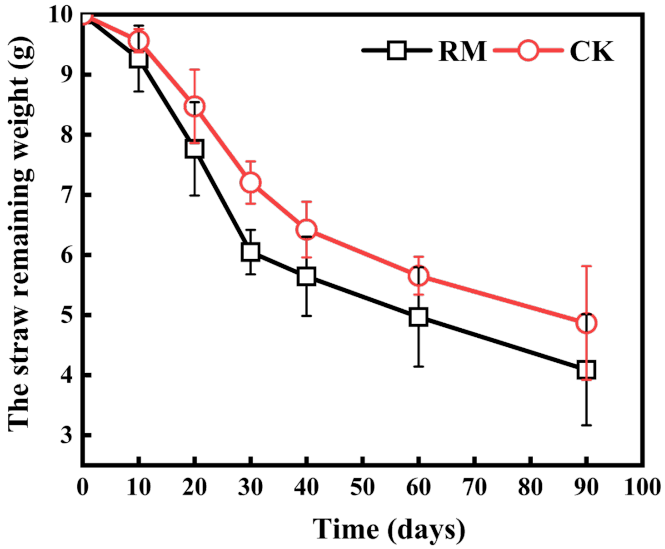
Research Background

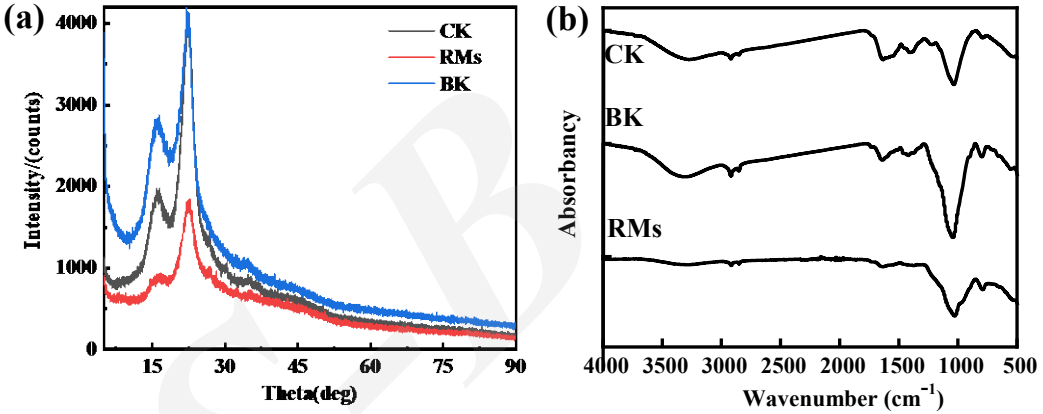


This paper mainly studied the effect of rumen microorganisms with rapid degradation ability on straw decomposition in soil, which was discussed as follows:

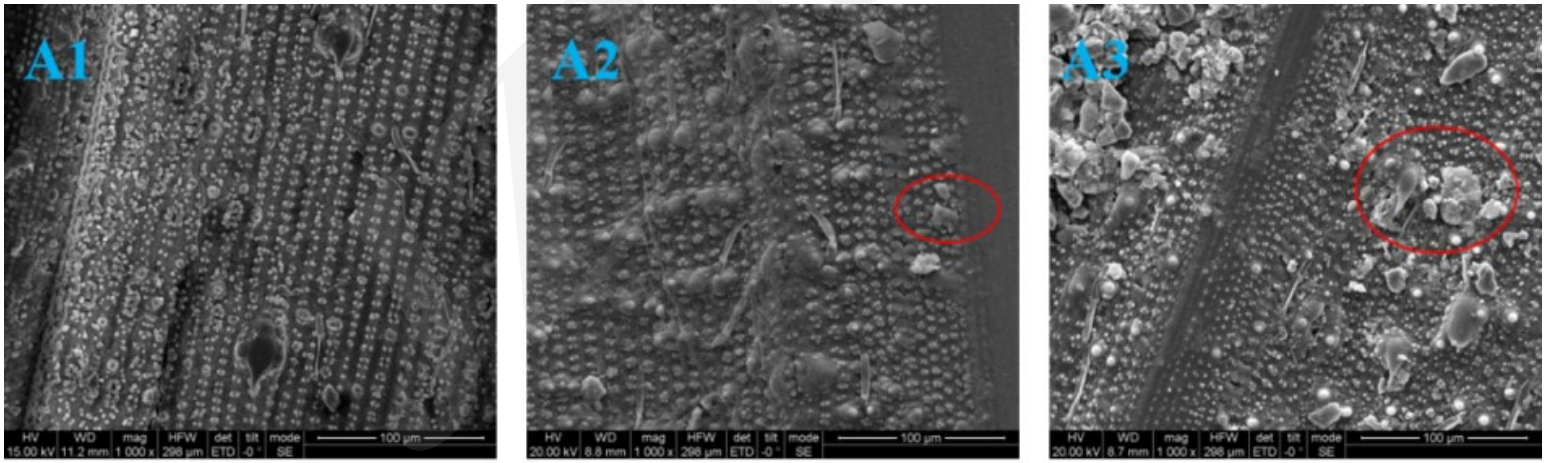
- Evaluate the effectiveness of rumen liquid on rice straw return
- Reveal the mechanisms of accelerated straw degradation
- Explore the effects of rumen liquid on soil chemical and biological properties.

Research Results



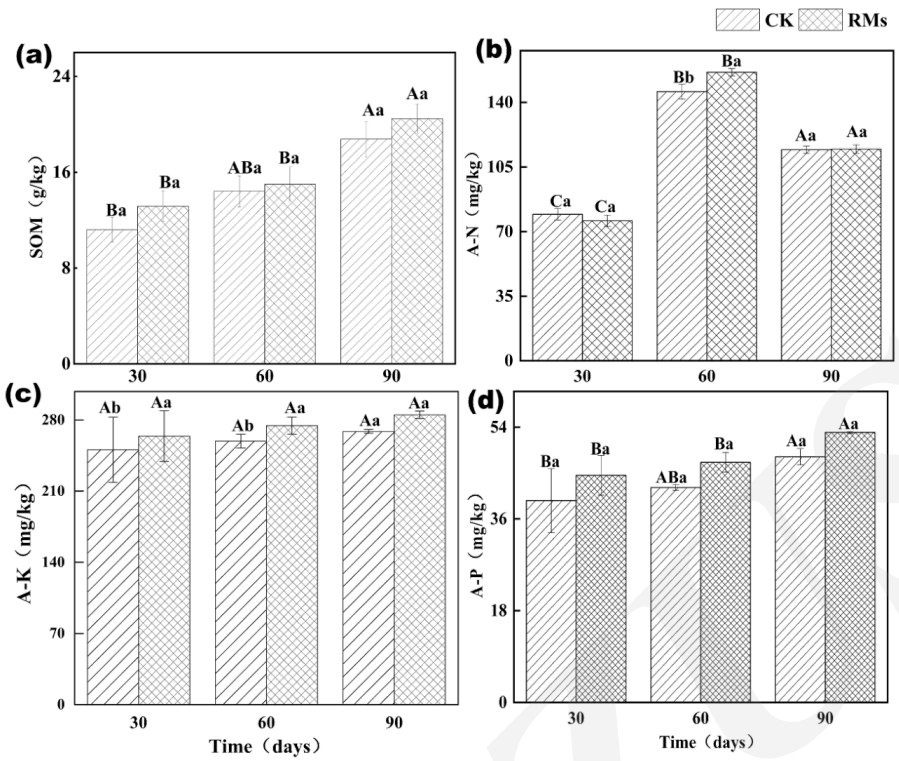


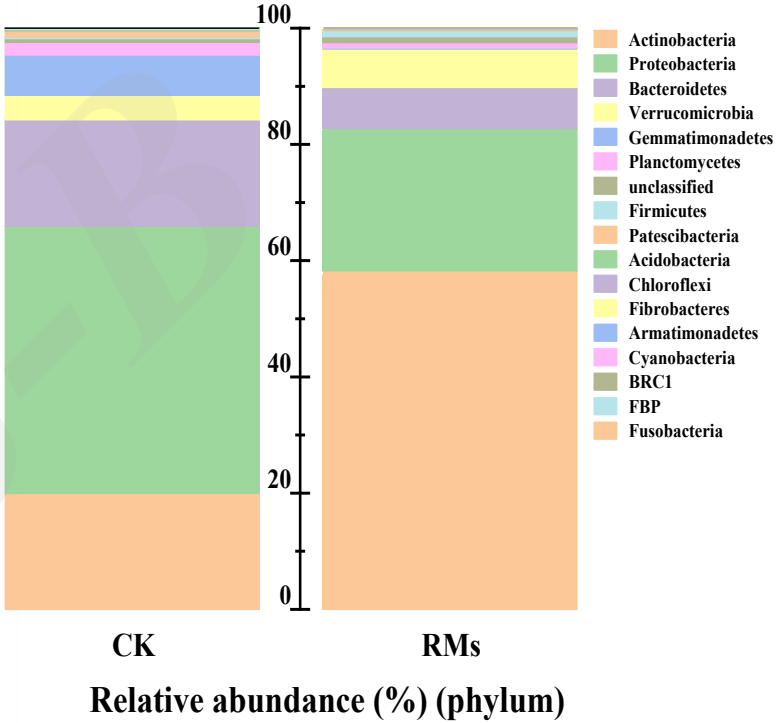
(a), the XRD diffraction spectrum.
(b), the FTIR absorption spectrum.



The outer surface of the rice straw, bar, 0.1 mm;(1), before degradation for the BK sample; (2), natural degradation for the CK sample;(3), inoculated rumen fluid degradation for the RMs sample

Research Results





(a) soil organic matter;

(b) available nitrogen;

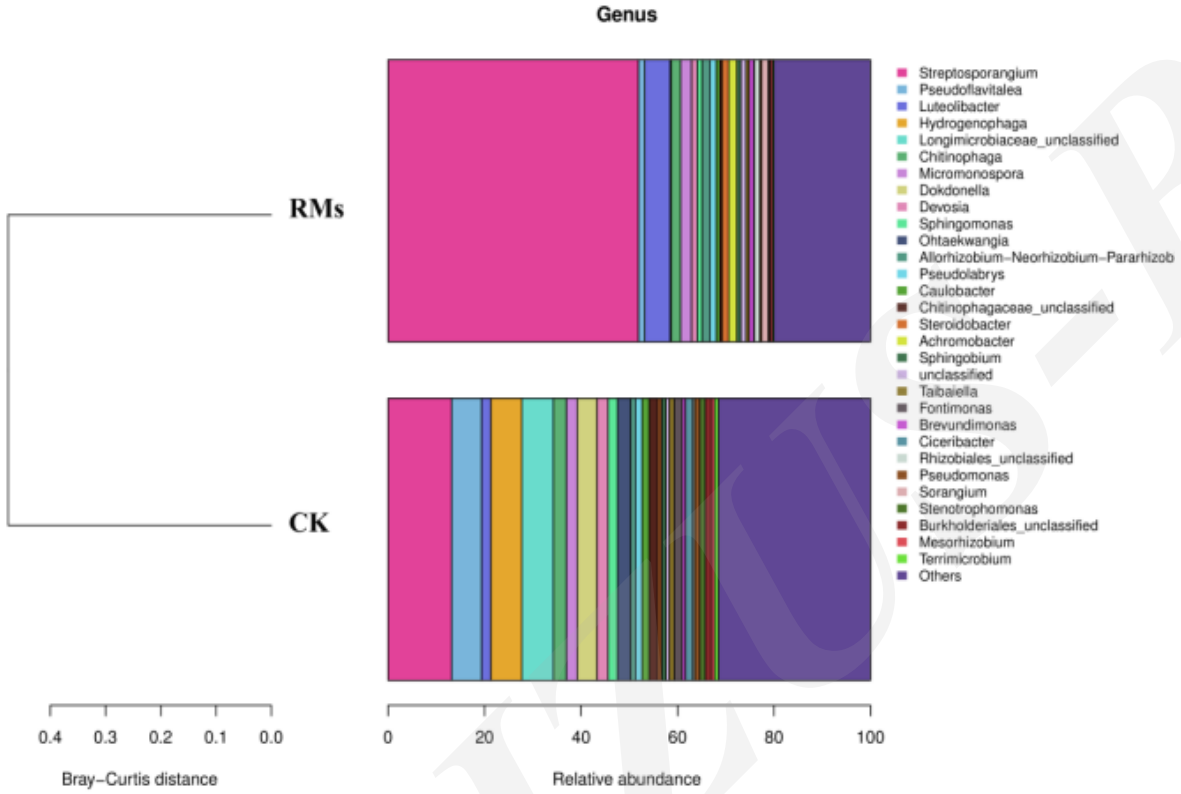
(c) available potassium;

(d) available phosphorus.

(Upper case letters, differences between groups; lower case letters, differences between the same groups, $p<0.05$)

Variations of soil microbial community structure (Phylum)

Research Conclusion



Variations of soil microbial community structure (Genus).

- **The study highlights that returning rice straw to the field and inoculation with rumen fluid can be used as an effective measure to enhance the biological value of recycled rice straw, proposing a viable solution to the problem of sluggish straw decomposition.**