

Role of wool waste as a source of nutrients for crop production and soil improvement in Torripsamments

Importance:

- The impaired soil health is due to imbalanced fertilizers use coupled with low use of organic manure is much to be blamed for declining fertilizer responses and crop productivity.
- The improper nutrient management has therefore led to emerge as multi-nutrient deficiencies in the Indian soil.
- In western Rajasthan management of soil available nutrients for optimum crop yield is of paramount importance.
- Wool is a common but important natural textile fiber used in manufacturing of woolen clothes and carpets. Rajasthan, especially district Bikaner is one among the highest sheep and wool producing areas in the country.
- There are about 163 Woolen Mills in Bikaner, manufacturing 1.5 lakh kg of carpet woolen yarn per day and releasing a huge quantity of wool waste, approximately 4-5% of total woolen production.
- In spite of containing considerable amount of plant nutrients, waste sheep's wool are mostly deposited in landfills and contained nutrients can no longer be exploited.
- One of the key issues with regard to the safe disposal is the possible existence of pesticides in woolen waste.
- In addition, fine hair of wool waste can cause breathing problem, decay of fell mongering effluent can cause various diseases in human.
- Thus, landfill cannot be a good option, rather converting the wool waste in some reusable and preferably marketable product may be much better waste management approach.
- More eco-friendly alternative is to use as a fertilizer.

Objectives:

- I. To study the feasibility of using wool waste as a source of plant nutrients for crop production.
- II. To study the effect of wool waste on soil properties.
- III. To work out nutrient use efficiency.

Preparation of partial decomposed wool waste

- First of all, a 500-l capacity tank was taken and 200 l of water was added to it. Then 300 kg of fresh cow dung was added to it and incubated for 20 days and shaken once in a day.

- Thereafter, 5 kg of woolen waste was added to develop microbes, which are responsible for decomposition of woolen waste.
- This slurry was spread on wool waste in layers in connected pit. Water was applied to pit to keep it moist and then pit was covered with plastic sheets. Material in pit was mixed at an interval of one month.
- After six month the prepared organic material is considered partially decomposed wool.

Achievements:

1. Wool waste in conjunction with FYM is feasible for the production of vegetables (Onion and bottle gourd) for sustainable crop production system & also reduce the fertilizer dose through increasing the fertilizer use efficiency (FUE)
2. Use of wool waste in conjunction with FYM after decomposition improved the soil properties(Physical, Chemical and biological)
3. Developed suitable method of composting of wool waste



View of composting of wool waste



View of wool waste response in onion and bottle gourd crops

Contact details for more information is as under:

Principal Investigator

Dr. S.R. Yadav

Zonal Director Research

ARS, Bikaner

SKRAU, Bikaner

Mob. No. 9509615536

Dr. P.S. Shekhawat

Director Research

Directorate of Research

SKRAU, Bikaner