Wool is Biodegradable

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Ready Biodegradability is Crucial to Sustainability

Wool is made of keratin, the same protein as human hair. Wool grows naturally on sheep just like our hair grows.

Through biodegradation, micro-organisms in soil or water break down matter and consume it. These micro-organisms break down during their life cycle. This is how biological life cycles from one to the next.

Tests show that with the ideal conditions, wool products are almost completely degraded after six months in the ground.[1]

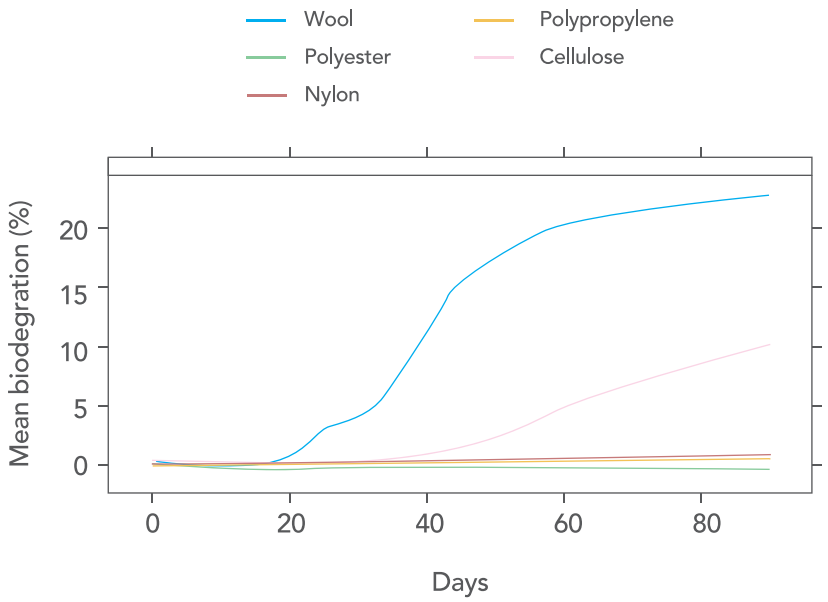
Because of wool's unique structure and its water-repellent outer membrane, when a wool garment is being worn and cared for, the wool fibres are resilient and long-lasting. It is in moist, warm conditions that wool biodegrades.

Marine Biodegradation

Wool also biodegrades in aquatic environments.[1] Early results from current research in New Zealand shows that by 90 days in salt water, different types of wool had biodegraded by about 20%.[2]

Further research is underway to determine how quickly wool biodegrades at different sea levels and temperatures.

Biodegradation of Textile Fibres



Wool Readily Composts

Research shows that wool functions as an effective soil conditioner and fertiliser, slowly releasing sulfur, nitrogen, phosphorous and potassium as it biodegrades.[3]

Moreover, wool fibre has been shown to biodegrade at a significantly faster rate in soil, composting and marine environments than synthetic fibre.

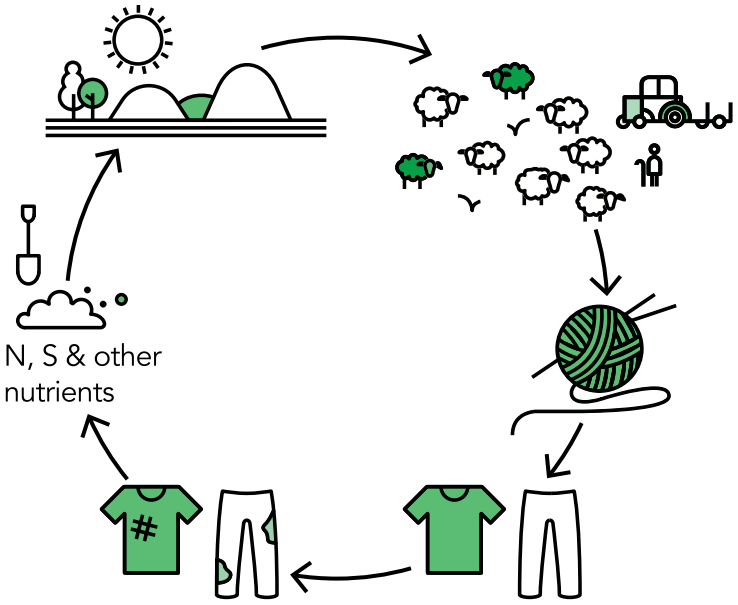
Research carried out to date, which investigates the influence of modern wool fibre processes, indicates that typical dyes and standard machine washable treatments do not substantially reduce relative rates of biodegradation between wool and synthetic fibre.

In addition, we now know that not only are synthetic textiles extremely slow to biodegrade, they can also disintegrate into fragments known as microplastics. A single polyester fleece garment can produce more than 1900 fibres per wash.[4]

Wool in the Marine Environment[1]

- Bacteria, not fungi, were observed to play an important role in marine degradation
- Bacteria isolated in New Zealand were in the groups Alteromonas and Oceanospirillum
- After 7 to 8 months the deterioration is quite advanced

Biodegradation of Wool



[1] Brown, R. The Microbial Degradation of Wool in the Marine Environment. University of Canterbury, 1994 - https://ir.canterbury.ac.nz/handle/10092/16802
[2] Ranford, Steve (April 2019). Wool Biodegradation: Presented at 88th IWTO Congress in Venice.
[3] Valtcho D. Jeliazkov (2005), Assessment of Wool Waste and Hair Waste as Soil Amendment and Nutrient Source, Journal of Environmental Quality, 34(6), 2310-17, DOI: 10.2134/jeq2004.0332.
[4] Browne, M.A., Crump, P., Niven, S.J., Teuten, E., Tonkin, A., Galloway, T., Thompson, R., 2011. Accumulation of microplastic on shorelines worldwide: sources and sinks. Environ. Sci. Technol. 45, 9175-9179.