Does biodegradable plastic film mulching affect soil microbial communities?

WASTE PROBLEMS

Plastic mulch films are used globally to grow crops. Most plastic film mulches are made from polyethylene (PE) which does not readily biodegrade. **After the growing season, plastic mulches end up in landfills and fragments are left behind, polluting the soil.**

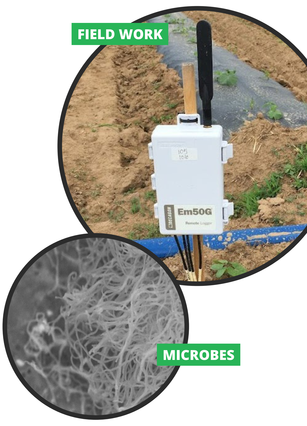
BIODEGRADABLE MULCH

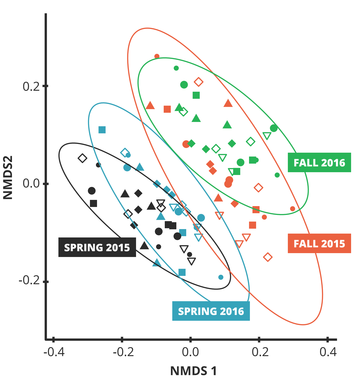
Biodegradable mulch films may alleviate this waste issue. They are made from biodegradable polymers and are **meant to be tilled into soil** after harvest, where they are degraded by resident soil microbes. However there is some uncertainty about how tilling these mulches into the soil might effect soil health.

OUR STUDY

In this study, we **evaluated the effects of biodegradable mulch incorporation on soil microbial community structure and function** over two years in two US locations: Tennessee and Washington. We compared 4 biodegradable plastic mulches, a cellulose paper mulch, and a non-biodegradable PE mulch against a plot with no mulch.

The results showed seasonal and location differences in soil microbial communities, **mulch treatment had no significant effects**.





TREATMENT:
- BioAgri
- Naturecycle
- No Mulch
- Organix
- PLA/PHA
- Polyethylene
- Weedguard

CONCLUSIONS

Biodegradable plastic mulch films do not adversely affect soil quality or soil microbial community structure and function.

Biodegradable and conventional PE plastic mulch films had similar effects on soil microbiology.

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