

What's the most sustainable cover crop? It's not mixture but monoculture

[Research thus far](#) has consistently found that cover crop polycultures are not necessarily better than cover crop monocultures. This is now reaffirmed by a large study, done in Pennsylvania, published [late last] year ([Finney et al. 2016](#)).

The [big idea](#) behind cover crop mixtures is that the increased biodiversity will result in increased productivity, increased ecosystem services, or both. The Finney group tested both hypotheses. They found that the mixtures produced less biomass than the best monocultures ... They also found that mixtures did not provide increased ecosystem services.... Finney et al. found that most of the ecosystem services which we want cover crops to provide are related to biomass production. ... From this they concluded that “a mixture may not be necessary” and “a single cover crop species may be sufficient and more economical than a mixture.”

Mixtures do have one advantage, they can provide more services (multifunctionality) than a monoculture. However, in mixtures, the level of individual services provided is less than with a monoculture.

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Why don't cover crop mixes work better than monocultures? Well, first, some ecological theory. The idea that biodiversity is better than monoculture comes from ecologists studying natural habitats. In nature, they observe niche differentiation (Connor et al. 2011). The idea is that a diverse mix of organisms can better use the available resources because of their different use characteristics. When their resource use does not overlap much, they are complementary.

The authors of this paper ask, “how can species be ‘complementary’ in their use of resources and production of biomass, and yet, a diverse community not perform processes any more efficiently than its most efficient species?” The simple answer is that there is no complementarity in these diverse mixes. Rather than complementarity, there are simple tradeoffs.

Any cover crop can do some good. If you like planting polycultures, do it. But don't let the appeal of the silver bullet, of the secret solution, cloud your judgement. Novelty entices the most sober-minded of us into thinking “this is it.” ... as science is confirming, cover crop mixes are not the restore-everything-to-as-it-should-be final solution we hope for.

The GLP aggregated and excerpted this blog/article to reflect the diversity of news, opinion and analysis. Read full, original post: [Cover crop best bet is monoculture, not mixture](#)