**Weed Suppression from Frost-seeded *Brassicaceae* Cover Crops**

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Cover crops can build soil fertility and suppress weeds. Red clover (*Trifolium pratense* L.) is a common winter-hardy cover crop that provides multiple benefits while requires little management, but its weed suppression performance is inconsistent. Residues of cool-season Brassicas crops such as white and yellow mustard (*Sinapis alba* L.) and spring canola and winter rapeseed (*Brassica napus* L.) when incorporated with soil can reduce weed seedling emergence. A randomized complete block design with 4 replications experiment (N = 48) was conducted at Cornell University’s Musgrave Farm to examine if brassicas provide reliable weed suppression. Each replication consisted of ten brassica cover crop species, a red clover, and a no cover crop treatments. Red clover and no cover crop are control treatments. The ten *Brassicaceae* species and red clover were frost-seeded into rolled cereal rye mulch on March 23rd, 2022. The no cover crop was rolled cereal rye mulch residue. Crop speculative coverage was evaluated from a 0.25 quadrat per plot on Jun 2nd, 2022 and crop and weed biomass were sampled from a 0.25 quadrat per plot on Jun 3rd, 2022. A non-linear model for crop – weed competition was fitted with nls and a linear model for crop speculative coverage was fitted with lm (stats package version 3.6.2) in R version 4.2.1. The crop-weed competition conforms to = , where is the weed biomass, C is the weed biomass when no cover crop presented, is the crop – weed competition coefficient, and is the cover crop biomass. This study suggested that 1) Collard provided the strongest weed suppression among all the examined *Brassicaceae* species and 2) Collard’s speculative coverage was significantly higher than that of red clover.