

## Soil seed bank community structure of pastures and hayfields on an organic farm

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Pasture management often focuses on the aboveground vegetation. A complementary potential plant community exists belowground in the form of buried seeds (the seed bank). Knowledge of how previous land use affects the seed bank in organically managed pastures would be useful in anticipating potential weed management needs.



In this research, we characterized the soil seed bank of organic hay and pasture land with different management histories. As expected, some of the largest differences in seed bank composition occurred between hayfields and pastures. Annual weeds, such as shepherd's purse and pigweed, were more likely to occur in hayfields and relatively young (less than 5 years old) pastures than in old permanent pastures (>20 years old).

The younger pastures were similar to alfalfa hayfields in seed bank composition probably because of similar management

history. Perennial forbs, annual grasses, and perennial grasses were more likely to occur in older, permanent pastures. Many of the other non-forage species in the seed bank could be tolerated in the vegetation or viewed as relatively useful as forage if grazed appropriately.

Organic farmers should be prepared to adaptively manage weeds with different life histories depending on previous management and land use.

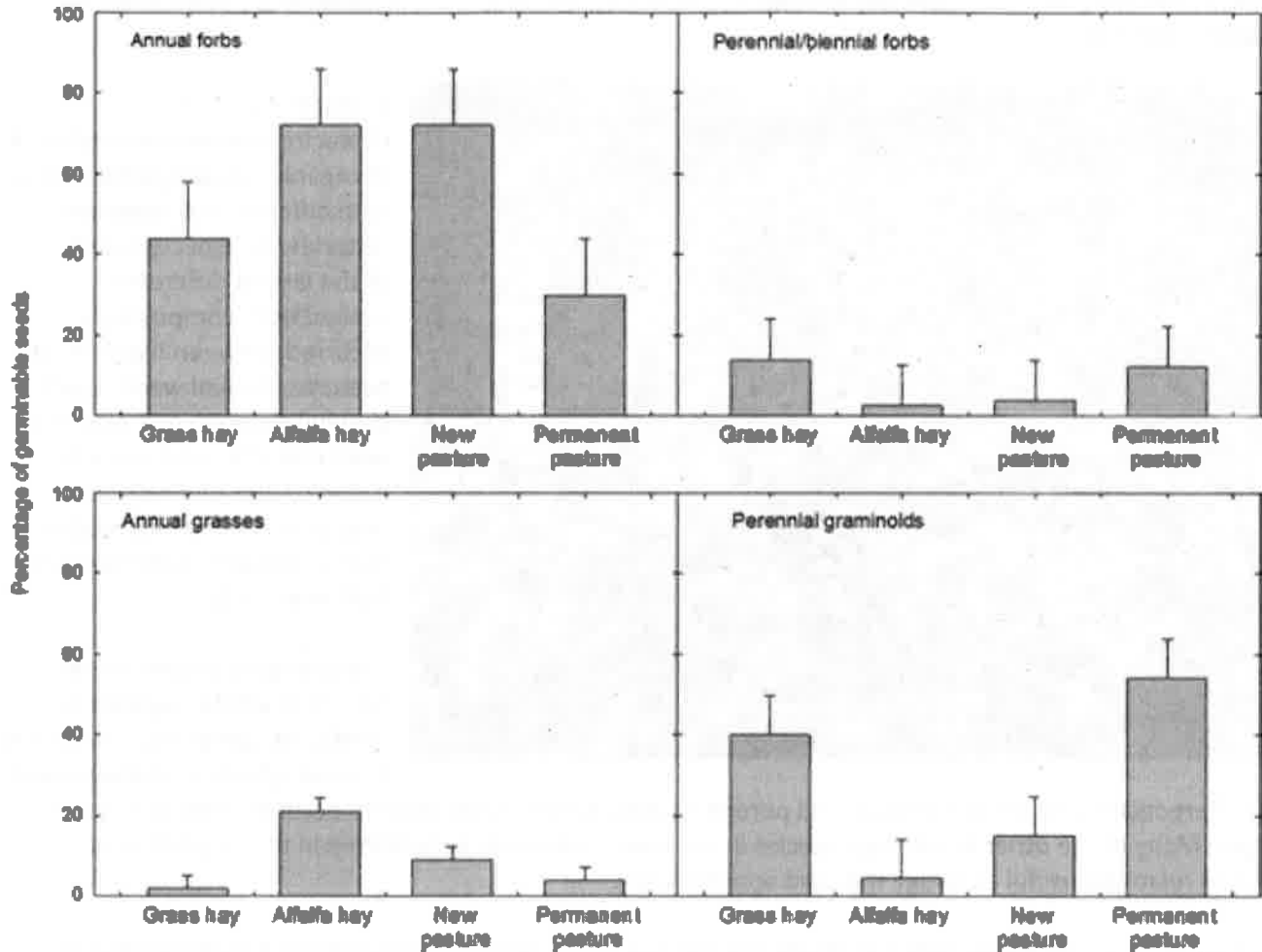


Fig. 1. Percentage of germinable seeds in different life form and longevity groups in seed banks of pastures and hayfields of the University of New Hampshire organic dairy. Data are totals for May, July, and September of 2010 and averages of two fields. Lines on bars indicate standard error of the mean.

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