



# Weed Seedbanks

Soil samples were collected on three diversified organic vegetable farms in the spring of 2009 to characterize the “germinable” weed seedbank, measured by spreading the soil in

	Beech Grove Farm, Trout Run, PA	New Leaf Farm, Durham, ME	Peacemeal Farm, Dixmont, ME
<u>Locations sampled on each farm (no.)</u>	17	30	30
<u>Weed species (avg. no. per location)</u>	8	10	9
<u>Germinable weed seeds (total no. per sq. meter, 10 cm depth)</u>			
<i>Average</i>	550	5,000	12,500
<i>minimum</i>	100	700	3,800
<i>maximum</i>	1,500	38,000	34,400
<u>Most abundant species</u>			
<i>no. 1</i>	marsh yellowcress	smooth crabgrass	redroot pigweed
<i>no. 2</i>	mouseear chickweed	low cudweed	common lambsquarters
<i>no. 3</i>	virginia strawberry	corn spurry	hairy galinsoga
<u>management:</u>	<i>alternate yr. cover cropping/fallow; focused on the seedbank</i>	<i>fall, full-season, cover cropping, fallowing; focused on both seedlings &amp; seedbank</i>	<i>fall, some full-season cover cropping; focused on seedlings &amp; early cultivation</i>

*greenhouse flats  
showing  
representative soil  
samples from each  
farm*



Beech Grove, Field 10



New Leaf, Field 3-3



Peacemeal, Field EP2

Eric Gallandt, Weed Ecologist, University of Maine



gallandt.wordpress.com  
[www.umaine.edu/weedecology](http://www.umaine.edu/weedecology)

## Seedbanks

“Credits” to the weed seedbank occur when weeds shed seed, i.e., seed rain, and “debits” when seeds are removed from the soil by germination, predation, or decay/death, in this declining order of importance. Managing weeds with a focus on the seedbank looks at the farming system with an eye first towards opportunities for preempting seed rain with short-season cash or cover crops that are harvested or terminated before troublesome weed species produce mature seeds. Next, opportunities for shallow soil disturbance, strategically-timed to be coincident with weed species-specific peak emergence potential, will encourage germination. Subsequent disturbance events can kill these “flushes” of weeds. When seed rain occurs, opportunities for predation are greater if seeds remain on the soil surface. Thus, fall tillage should be delayed to encourage seed predation.

## Seedbanks on the Beech Grove, New Leaf and Peacemeal Farms

Weed communities were comprised of an average 8 to 10 species on each farm. The three most abundant species at the Peacemeal Farm are troublesome in most vegetable crops and are a widespread problem among northeastern vegetable growers. At the New Leaf Farm, smooth crabgrass was the top-ranked species, primarily because of a large infestation in a field where pigs had been pastured. Low cudweed and corn spurry, while a problem in salad mix, are not particularly troublesome in most other vegetable crops. At the Beech Grove Farm, typically pernicious summer annual weeds were rare and not among the top ranked species.

For more information see:

Managing weeds with crop rotation

[http://www.newenglandvfc.org/pdf\\_proceedings/2009/MWWCR.pdf](http://www.newenglandvfc.org/pdf_proceedings/2009/MWWCR.pdf)

and these eXtension articles:

Manage the Weed Seed Bank—Minimize "Deposits" and Maximize "Withdrawals"

<http://www.extension.org/article/18527>

Manipulating Weed Seed Banks to Promote their Decline

<http://www.extension.org/article/18528>

Eric Gallandt, Weed Ecologist, University of Maine

[gallandt.wordpress.com](http://gallandt.wordpress.com)  
[www.umaine.edu/weedecology](http://www.umaine.edu/weedecology)