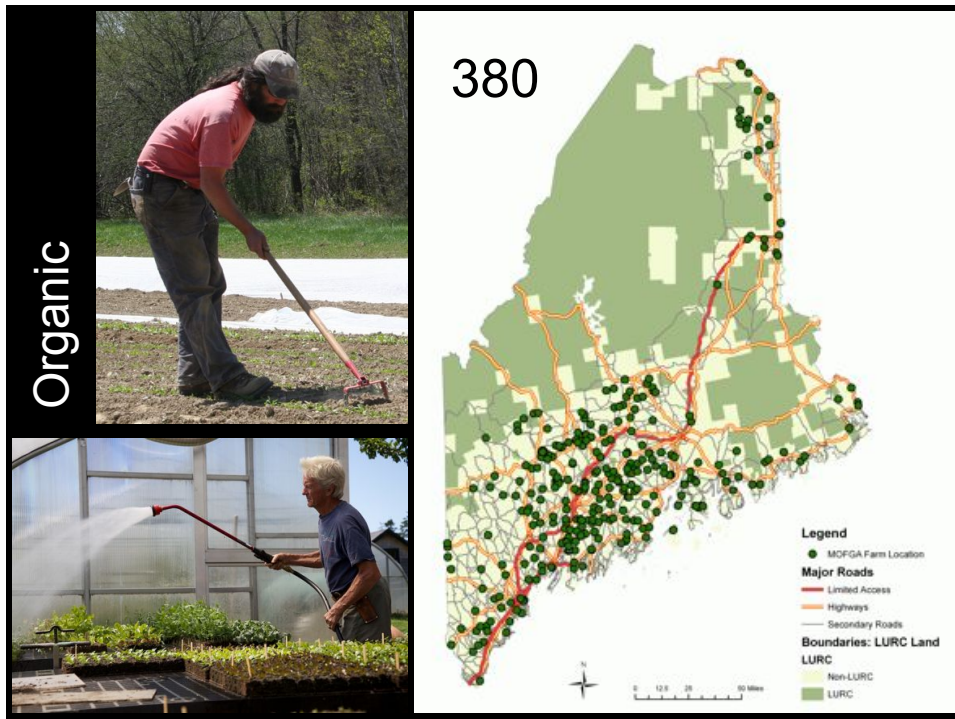


Cultivation and seedbank management for improved weed control

Eric Gallandt
University of Maine, Orono

Associate Professor of Weed Ecology and Management

Chair, Department of Plant, Soil and Environmental Sciences



hand weeding

<u>Crop</u>	<u>Planting</u>	<u>hour/acre</u>
onion	sown	40-160
carrot	sown	40-160
sugar beet	sown	30-60
various	transplants	8-20
cereals	sown	3



- intra-row weeds



- inter-row weeds are not a problem

problems

intra-row weeds

variable efficacy

density independent efficacy

solutions

precision & intra-row cultivation

improve efficacy

reduce weed seedbank

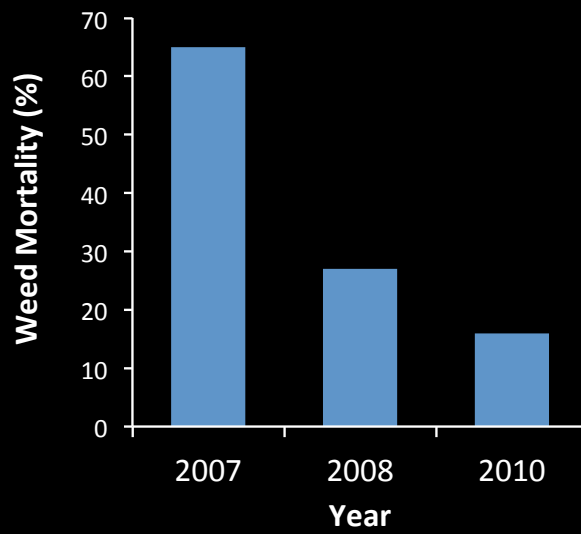
Garford Robocrop System





- adjust tine angle to change aggressiveness

**Lely Spring-tine Harrow
Efficacy**





March, 1919



May, 2009

innovation for small farms

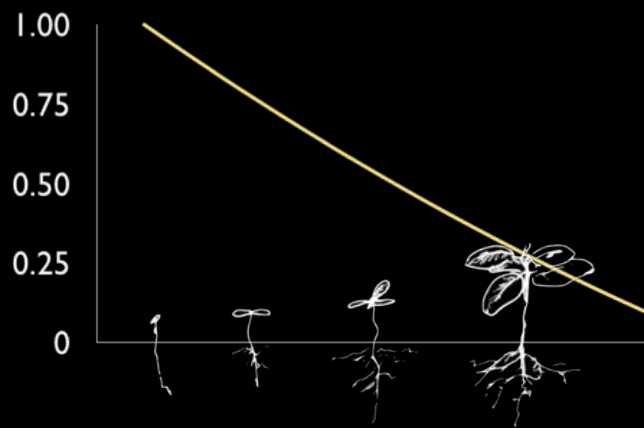


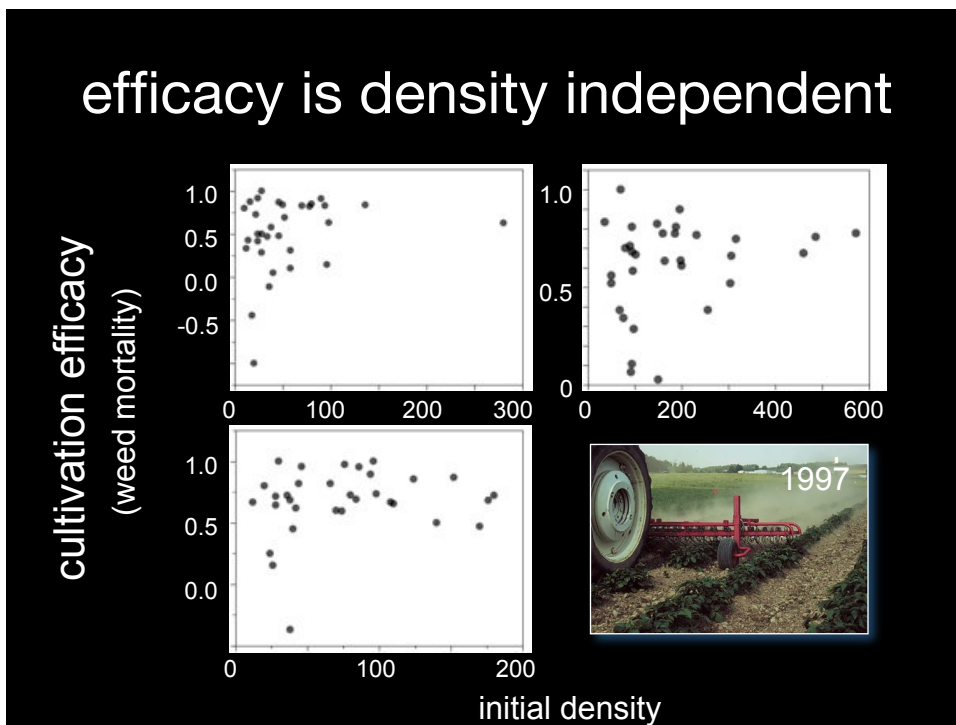
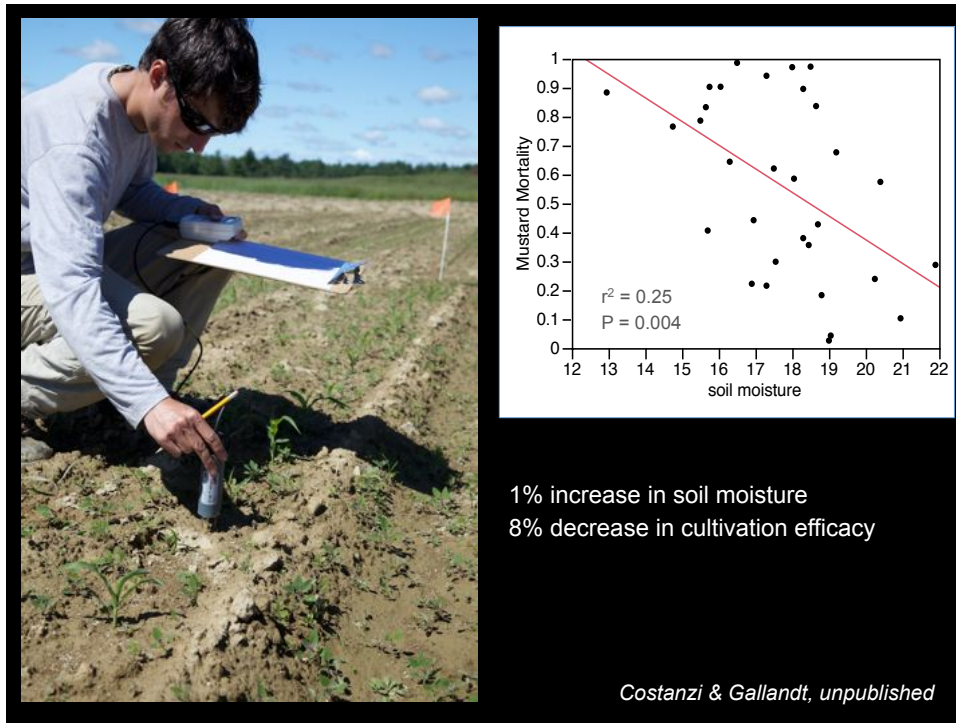
Rogers Farm, October 2008

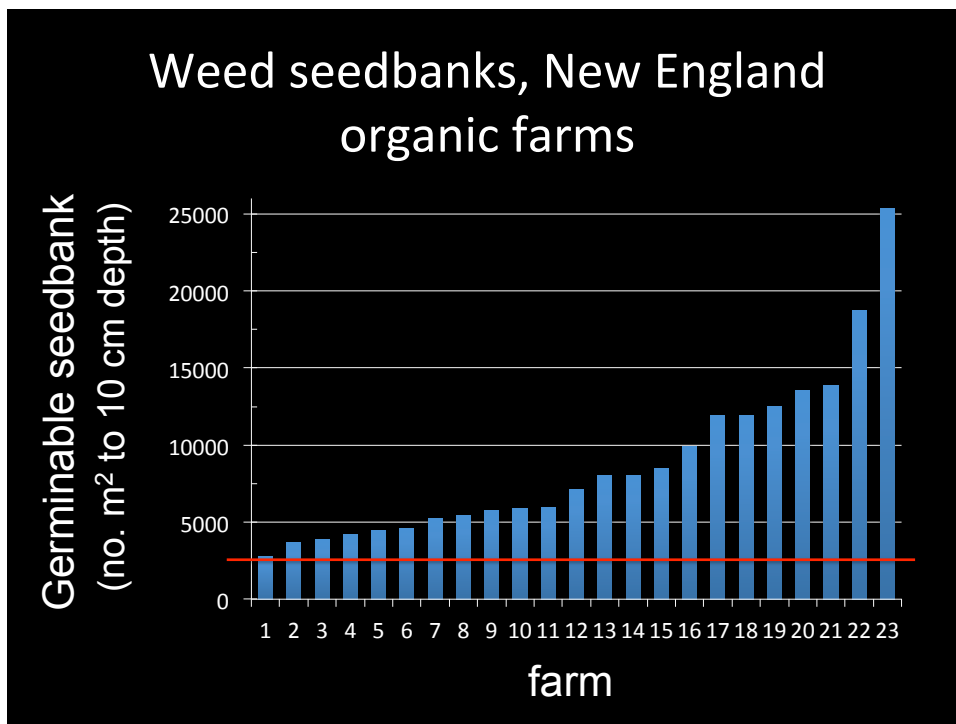




weed control (proportion killed)







solutions

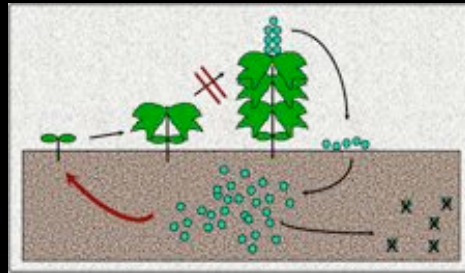
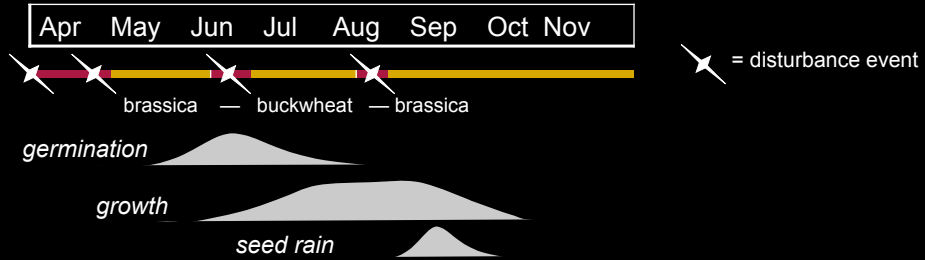
precision cultivation

intra-row cultivation

reduce weed seedbank

3 strategies...

disturbance and timing are key



Weed	Spring			Summer			Autumn			Winter		
	F	M	A	M	J	J	A	S	O	N	D	J
hairy galinsoga <i>Galinsoga ciliata</i>												
redroot pigweed <i>Amaranthus retroflexus</i>												
foxtail <i>Setaria sp.</i>												
horseweed <i>Conyza canadensis</i>												
shepherd's purse <i>Capsella bursa-pastoris</i>												

1

use timely fallow periods...

*if the
seedbank
is high*

...to deplete the
weed seedbank

“weed the soil not the crop”

Anne and Eric Nordell, Trout Run Pennsylvania



practices

- “no seed”
- “skim plowing”
- rotational cover cropping
 - cover crop / fallow / cover crop
 - timing of fallow alternates: spring / summer
 - fallow events include harrowing & cultipacking
- intercropping
 - e.g., *Vicia villosa* in onion, leek

weed seedbanks

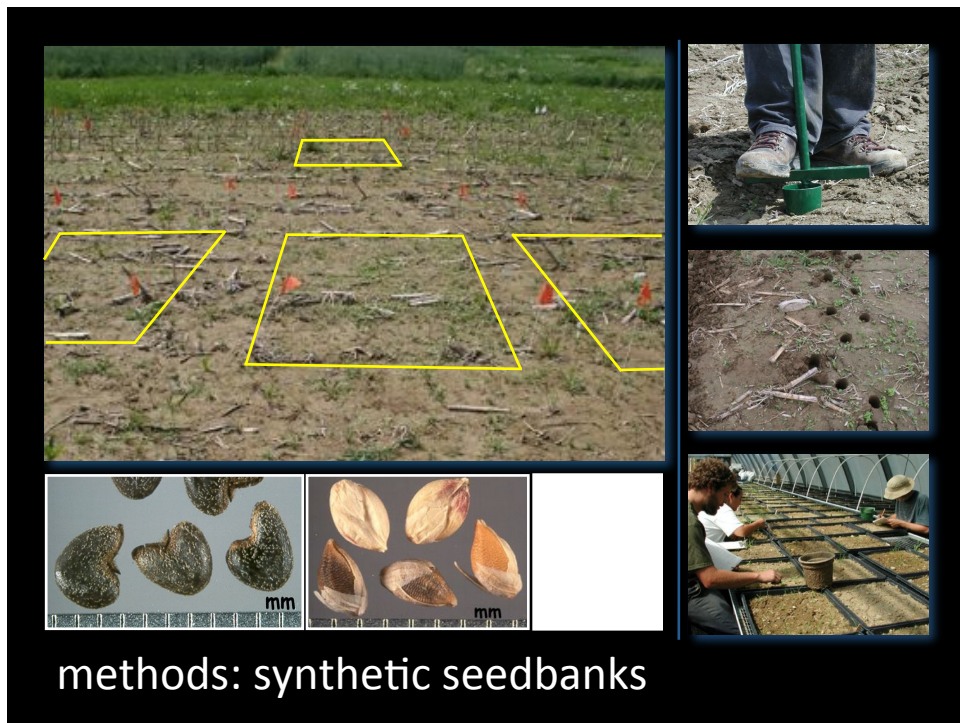


Dixmont, ME

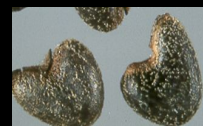
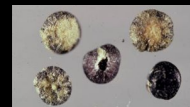
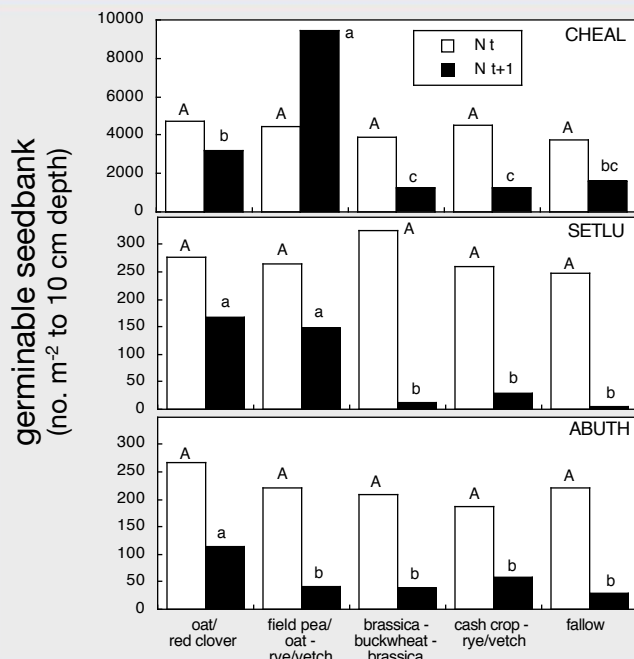
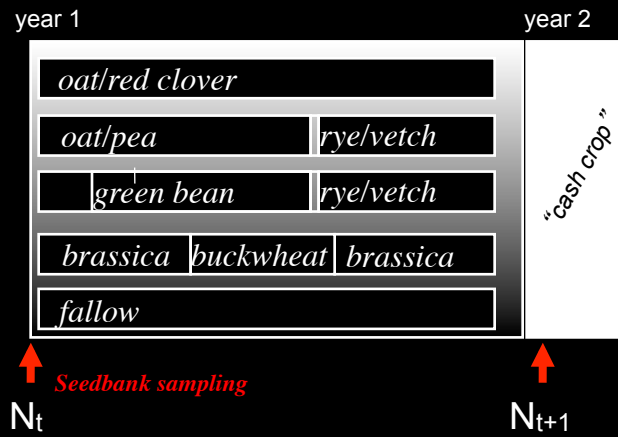
Durham, ME

Trout Run, PA





cover cropping systems low to high disturbance

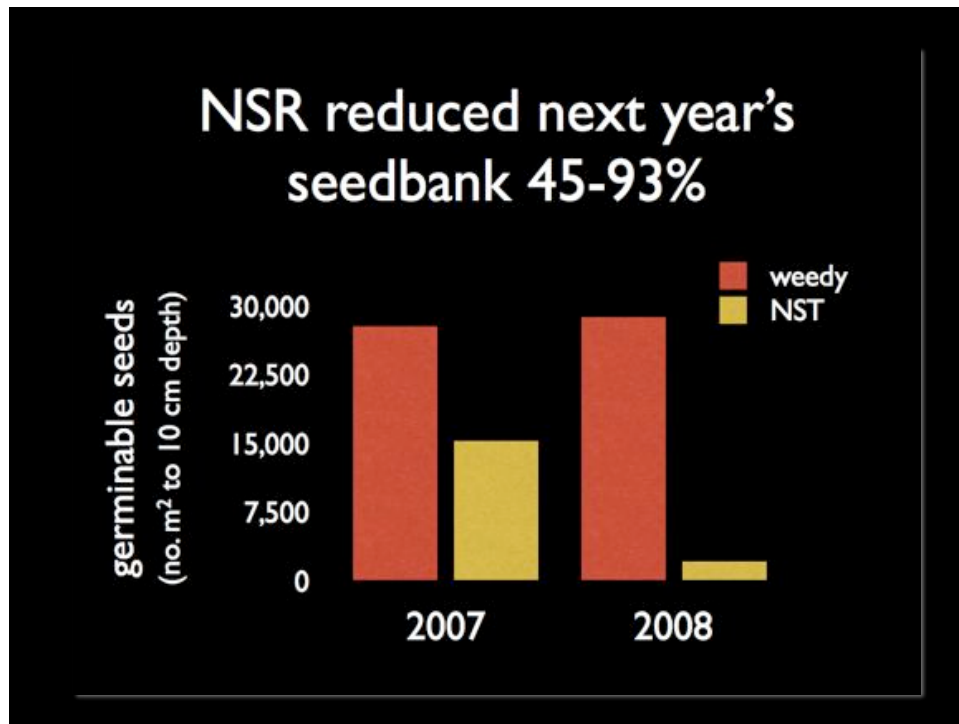


2

prevent seed rain...

...for immediate effects



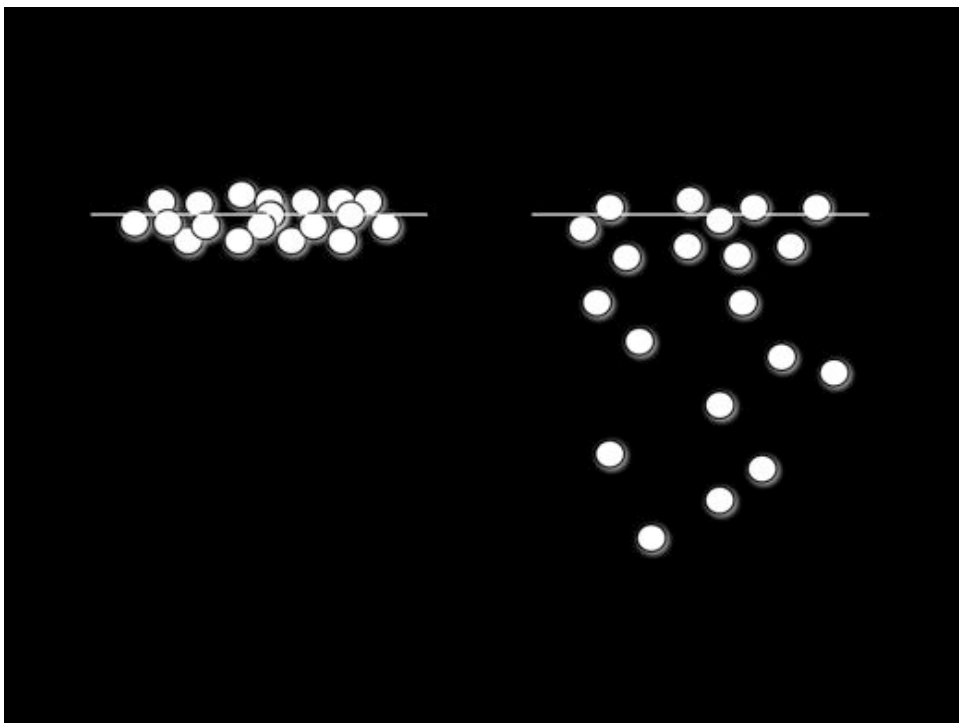


3

manage seed rain...

...to enhance predation
and germination losses





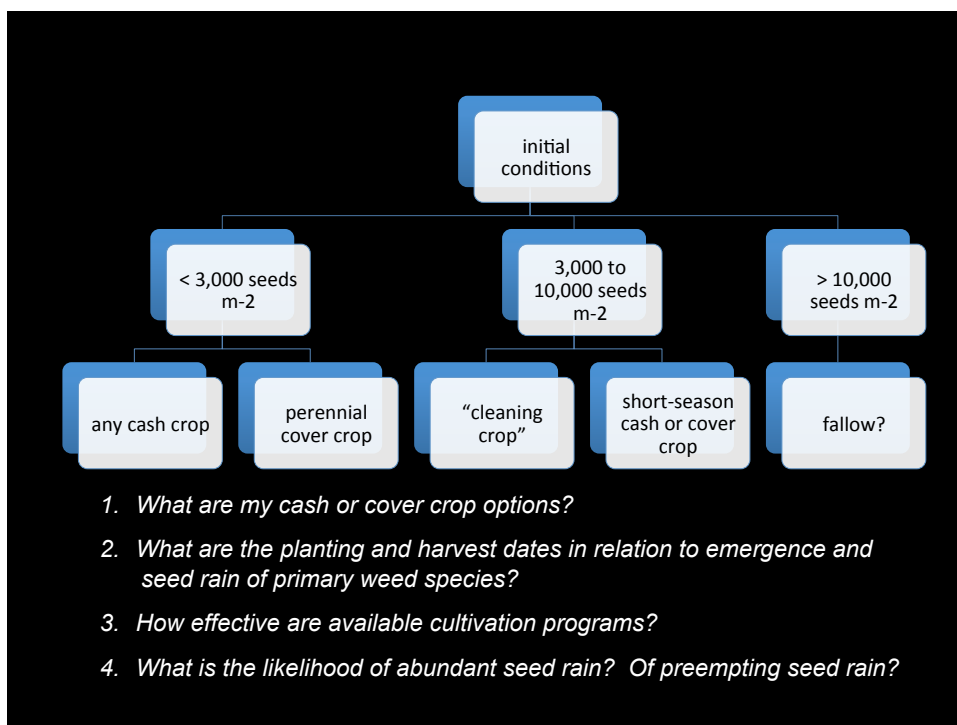
no-till fall cover cropping keeps seeds
at the soil surface



predation

treatment	2006 - 07	2007 - 08	2008 - 09
Exclosure +	28,800	62,500	53,200
Exclosure -	28,400	36,100	51,800
	$p = 0.983$	$p = 0.001$	$p = 0.765$

“predation” 42%





gallandt.wordpress.com

Weed Management for Organic Farmers

practical research projects from the University of Maine Weed Ecology Group

Weed Management in Organic Cereals


Posted May 21, 2010 by gallandt

Categories: [Ecologically-based Weed Management](#), [Organic Grains](#)

Lauren Kolb, Ph.D. student, recently described her thoughts regarding managing weeds in organic cereals in a video posted to our YouTube site "zeroseedrain."

Check it out!

<http://www.youtube.com/user/zeroseedrain#p/a/u/0/bjM9dnGTC4Q>



Comments: [Be the first to comment](#)

Home

[Eric Gallandt](#)

[google2d802d5b39db5802.html](#)

Subscribe

Weed Management for Organic Farmers syndicates its [weblog posts](#) and [Comments](#) using a technology called [RSS \(Real Simple Syndication\)](#). You can use a service like [Bloglines](#) to get notified when there are new posts to this weblog.

Archives

[May 2010](#)

[March 2010](#)

[November 2009](#)

[September 2009](#)

[July 2009](#)

[June 2009](#)

[May 2009](#)

Categories

[Ecologically-based Weed Management \(3\)](#)

[Organic Grains \(1\)](#)

[Weed Master Project \(8\)](#)

[Weed Seedbank \(1\)](#)