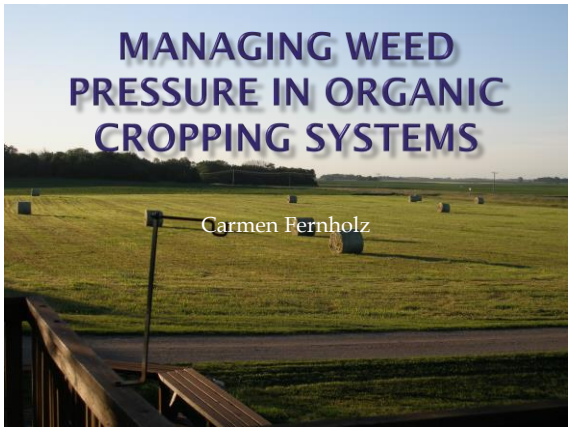
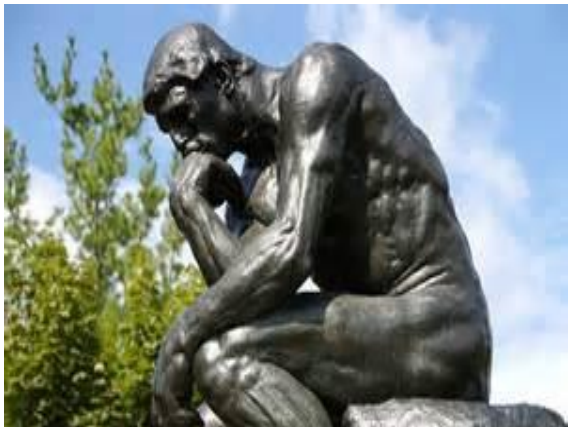


Conventional weed management focuses almost exclusively on using herbicides to kill weeds at the seedling stage. In contrast, weed management in organic farming includes direct control tactics to limit seedling survival, but also more subtle tactics that affect weed germination, reproduction, and seed and vegetative propagule survival and dispersal. (Liebman and Davis, 2000).

Every operation on a field must have a dual purpose:
fertility management
and
weed management



Soil health affects weed control in our fields

Although many landowners may not give much thought to weed control as a soil health measure, Gared Shaffer, South Dakota State University Extension weeds field specialist, said the two go hand-in-hand.

"The same management practices which increase soil health, like planting cover crops or a diverse cash crop rotation, also can be deterrent to weeds," Shaffer said.

He referenced a quote from Dwayne Beck, manager of the Dakota Lakes Research Farm. Beck presented during a recent soil health workshop hosted by South Dakota Soil Health Coalition.

"Anytime producers do the same thing year after year the Earth's ecosystem finds a way around it to make it more diverse" said Beck.

Without this diversity, Beck further explained that monoculture farming will give way to a possible proliferation of curtain weed species.

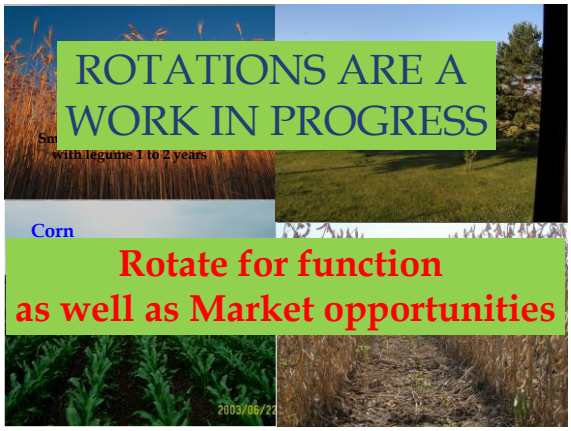
"This means a potential increase in weed species anytime monoculture crops are planted," Shaffer said.

Rotations	**(biological)**
Cover Crops (Soil Cover)	(biological)
Weed Seed Predation	(biological)
Split Tillage	(mechanical)
Tine Weeding	(mechanical)
Rotary Hoeing	(mechanical)
Cultivation	(mechanical)
Hand Weeding	(mechanical)
Compaction	(biological)
Seed Bed Temperatures	(biological)

Alternative Inputs Not Lower Inputs!!!!!

Split tillage seed bed preparation
Manures and composts
More Rob… …ns
Under-see…
manures
Additiona… …row,
Cultivator, …e
Weeder, Flame Weeder
Hand weeding

Alternative Inputs Not Lower Inputs!!!!!



Many Little Hammers in the Management of Annual Weeds

Cultivat…
Diversif… …tems
Soil ame…
disturba…
Feeding … …ogens
and seed…

(Liebman and Davis, 2000).

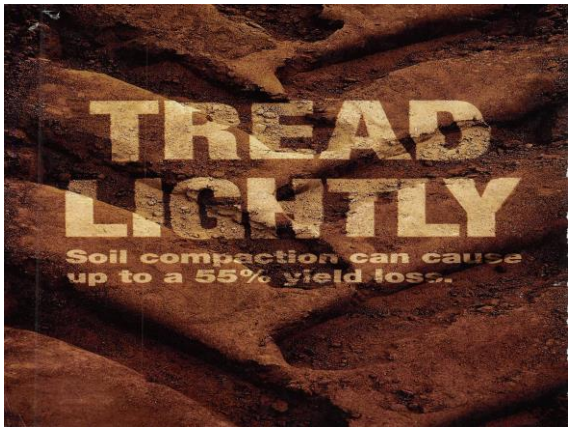
The Weed Management Tool Kit for Organic Farming

Weed management has three critical concerns.

The first and most immediate concern is *limiting the amount of damage* weeds inflict on an associated crop through competition for resources, release of allelopathic chemicals, and physical interference with maintenance and harvest operations.

The second, longer-range concern is *minimizing the size of future weed populations* by reducing the production and survival of new weed seeds and vegetative propagules.

The final concern *is preventing the introduction of new, more problematic weed species* into an existing weed flora through monitoring, sanitation, and targeted eradication efforts.



Soil compaction caused by field traffic and machinery increases with high soil moisture because soil moisture works as a lubricant between soil particles under heavy pressure. The most effective way to minimize soil compaction is to avoid field operations when soil moisture is at or near field capacity.

Instinct would lead you to believe that you should till as deep as possible to shatter any smeared soil or compacted layers that were created. However, your soil's best natural defense against compaction is **soil structure**. The deeper you till and the more aggressive your operations, the more structure you will damage, leaving your soil susceptible to further compaction.

Jodi DeJong Hughes, Extension Educator

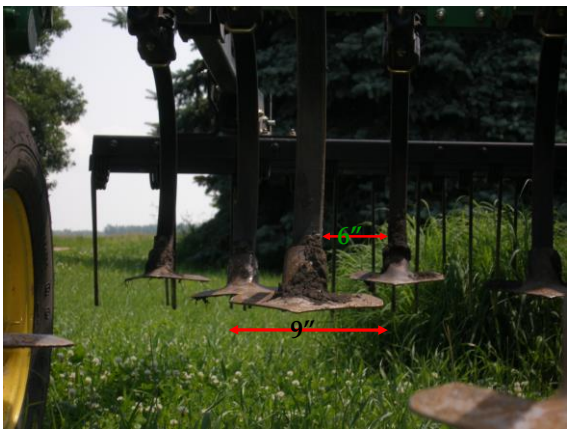
A 600-bushel grain cart, for example, weighs about 20 tons on a **single** axle

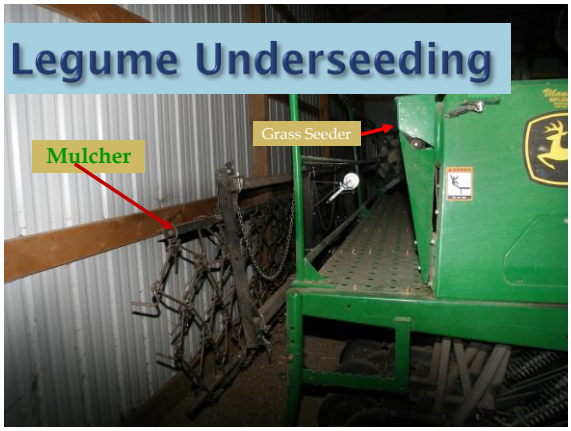
We need a residue blanket to intersect rain. If we don't have a good cover, beating rain can make a soil crust. Fall tillage also leaves soil exposed all winter and spring to wind and water

Planting Dates

Small Grain Seeding

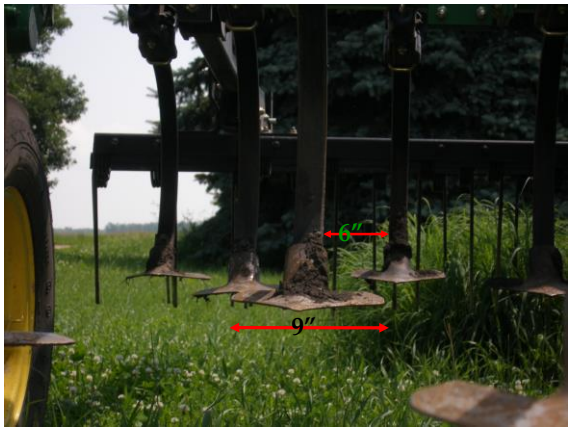
Seed Bed Tillage





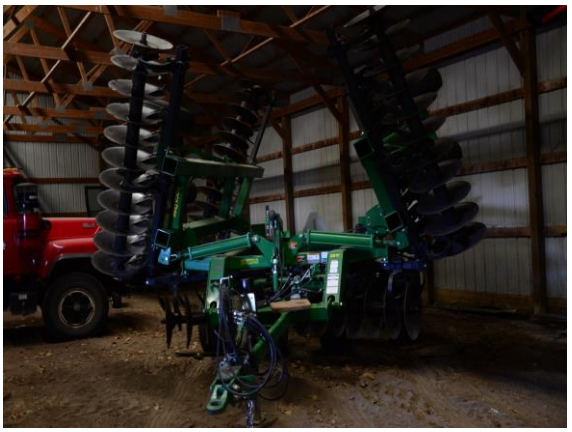
Split Tillage Seedbed Preparation for Row Crops

Weed Regrowth Just Before 2nd pass of a **Split Tillage System**

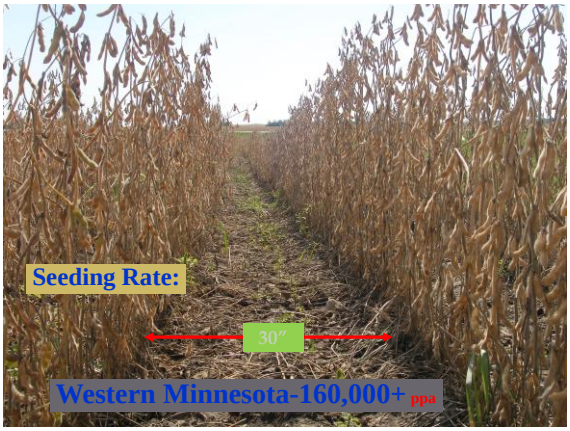

6″
9″

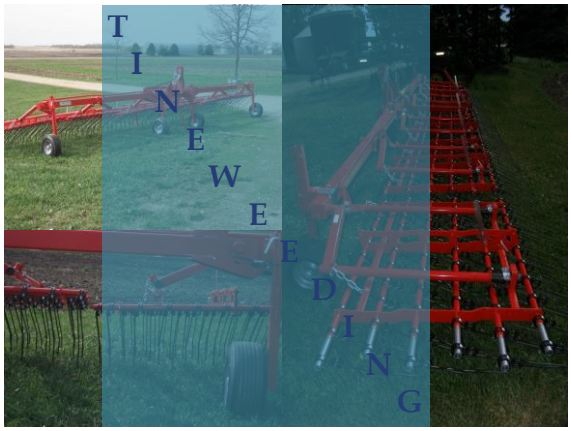

Weed Emergence Before 2nd Pass


Red Clover Regrowth Just Before 2nd pass of
a Split Tillage System ahead of Corn planting




Corn stalks ahead of first pass of a split tillage seed bed prep for soybeans





Hi Carmen!
Hope all is well.

I am quite certain that damage to the corn tips (spikes) as they are near to emerge or emerging is not a big deal and that there is little to no yield reduction.

Corn with the tips broken off of should grow right back. The growing point is still well below the soil. For corn with tips broken off yesterday, you might see them regrowing today already.

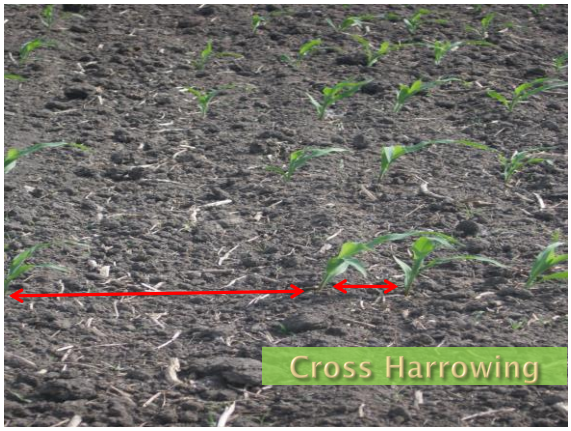
My opinion is that the yield effect from the broken tips is little to nothing. If soil conditions are good for tine weeding, then I think I would be tempted to just do it, even if the tips of some plants were being broken off. It shouldn't hurt the growing points at all.

This is supported by the organic weed management guide chapter, which says that PRE and POST mechanical weed control can be performed in corn up to and through emergence (for both rotary hoeing and harrowing)... see the tables in...

http://www.organicriskmanagement.umn.edu/weed_mgmt5.html

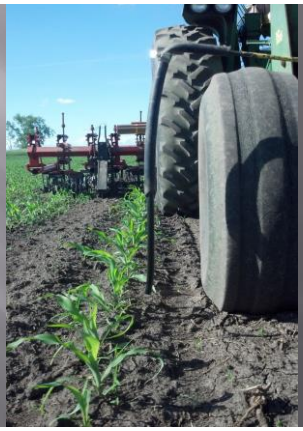

When in Doubt
Tine Weed or
Rotary Hoe

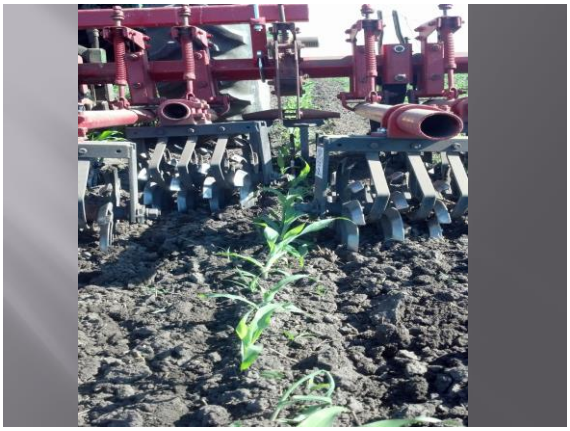

Cross Harrowing


Cross Harrowing


Rotary Hoeing

CULTIVATION

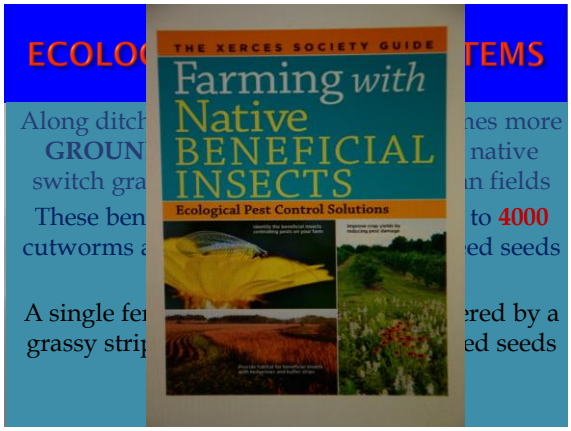





Row Crop Cultivating


FM


9. Establishing
Weed Seed
Predation
Environments


ECOLO
TEMS
Along ditch
GROUN
switch gra
These ben
cutworms
A single fe
grassy strip
nes more
native
n fields
to 4000
ed seeds
ered by a
ed seeds
THE XERCES SOCIETY GUIDE
Farming with Native BENEFICIAL INSECTS
Ecological Pest Control Solutions


Davis & Liebman (2003) reported that predation of giant Foxtail *Setaria faberi* Herrm. seeds was greater in wheat *Triticum aestivum* L. intercropped with red clover *rifolium Pratense* L. compared with a wheat monoculture.


Prairie deer mouse – a common seed predator .

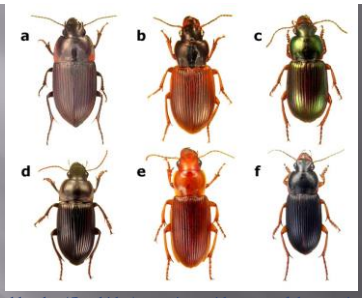


Figure 1. Ground beetles (Carabidae) come in a wide range of shapes, sizes, and colors—and feeding habits. Of the more than 2200 species of carabid beetles known in North America, many are valuable predators of insect pests, and others—like those shown here—are recognized weed seed predators. (a) Anisodactylus rusticus (b) Anisodactylus sanctaecrucis (c) Harpalus affinis (d) Harpalus caliginosus (e) Harpalus erraticus (f) Harpalus pensylvanicus. Figure credits: John Goulet, Canadian Biodiversity Information Center.

HEEL SWEEP

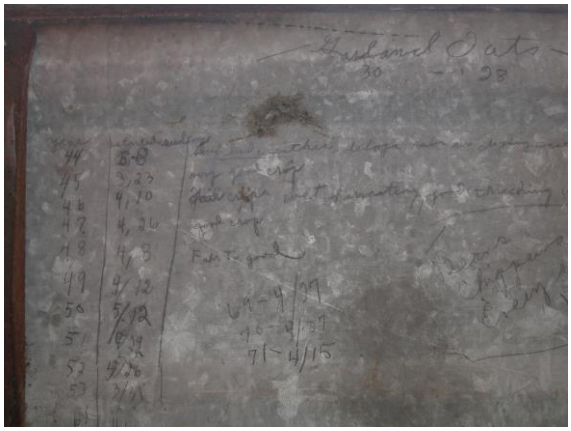
The GABER HEEL SWEEP is designed to fit over the top of the chisel plow shank. A chisel bolts on the front in combination with the sweep to allow for chiseling and cultivating operations at the same time.

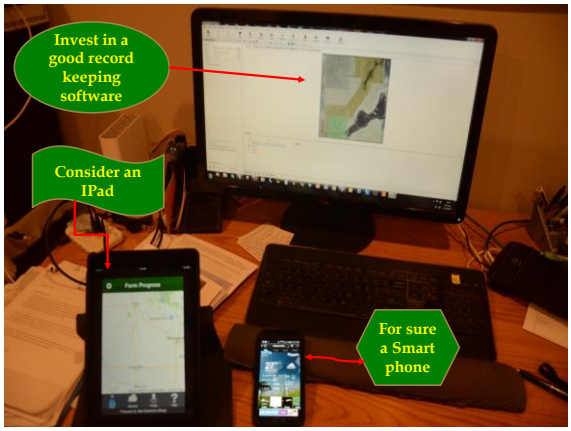
The heel swechisel combination breaks up hard pan allowing for better root penetration and moisture absorption below the hard pan that is left by conventional large sweeps.

The GABER HEEL SWEEP can also be used for the application of fertilizer with the addition of a tube arrangement on the rear of the shank.

The heel sweep should be mounted so that the wings of the sweep are level when the chisel plow frame is level. The heel sweep has slotted holes so that leveling adjustments can be made when the sweep is mounted. The point of the chisel extends approximately two inches below the level of the leading edge of the sweep.

12. Write It Down





Thank You

Contact Information

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