Cavity Spot Epidemiology

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2014 Cavity Spot/*Pythium* species

	Field			
	1	2	3	4
P. cryptoirregulare				1
P. sulcatum		4	1	2
P. ultimum	2			
P. violae	24	12	8	6

P. cryptoirregulare insensitive to Ridomil; all other isolates sensitive to Ridomil, Ranman, and Reason

Alternate hosts of *Pythium violae*

Roots not colonized:

Barley UC 937
Cabbage Chinese One Kilo Slow Bolt
Corn sweet Bodacious
Eggplant Long Purple
Parsnip Turga
Pepper Chile Ancho/Poblano
Oats Swan
Onion Bunching/Scallion Tokyo Long White
Ryegrain Merced
Tomato Bush Italian Roma
Triticale Pacheco
Wheat Patron

Roots colonized, P. violae recovered:

Cabbage Copenhagen Market
Cucumber Marketmore
Melon/Cantaloup Minnesota Midget
Spinach Bloomsdale
Swiss Chard Bright Lights

Roots colonized, slight growth reduction:

Beet Detriot Dark Red
Lettuce Butterhead Buttercrunch
Radish Cherry Belle

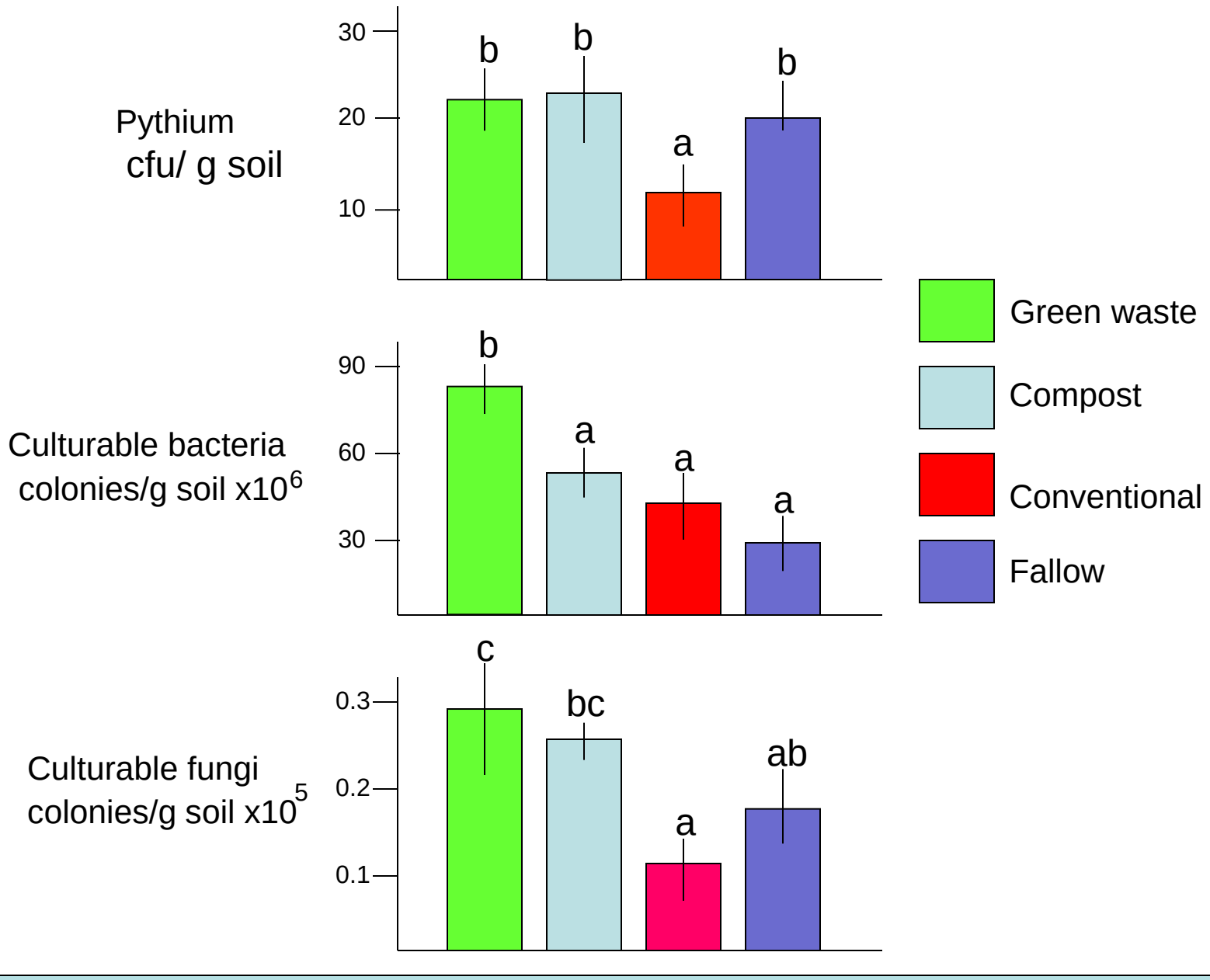
Roots colonized, early growth reduction:

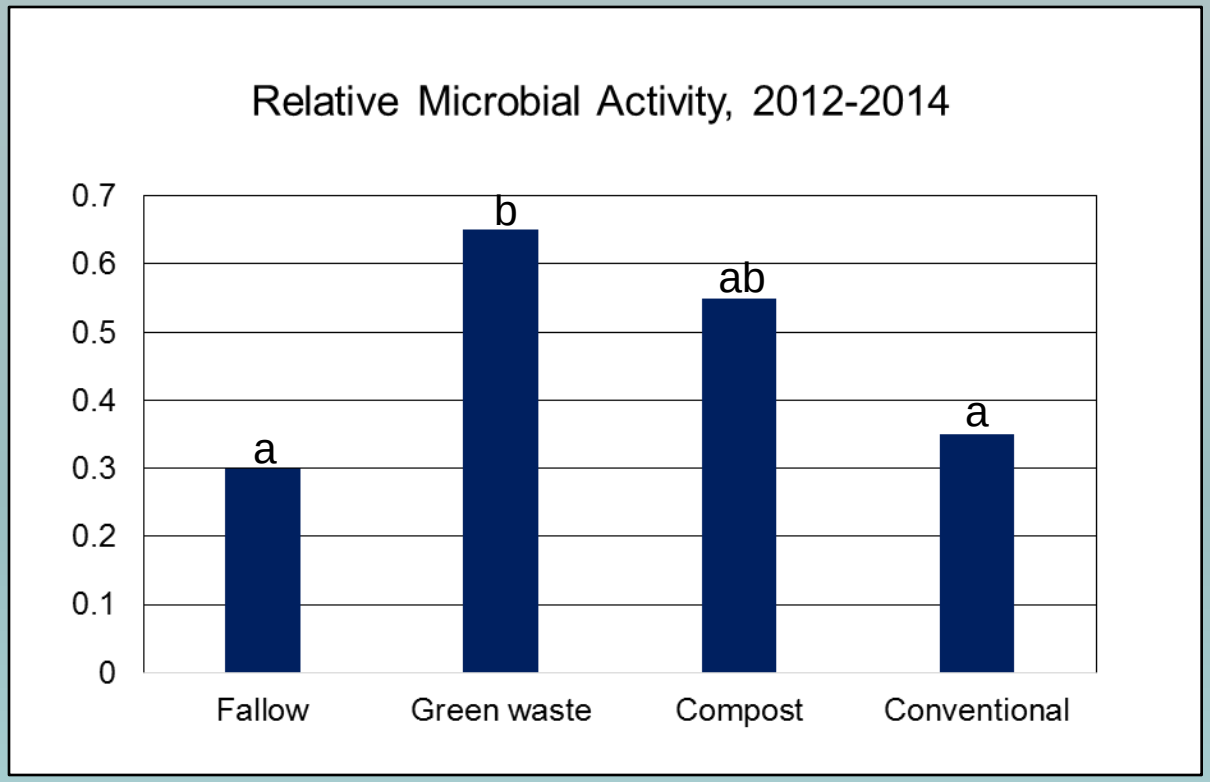
Bean Bush Baby Lima
Pea Snap Super Sugar

Treatments	Winter	Spring	Summer	Fall
Green waste	green manure	potato	green manure	carrot
Compost	compost	potato	compost	carrot
Fallow	--	potato	--	carrot
Conventional	--	potato	metam	carrot

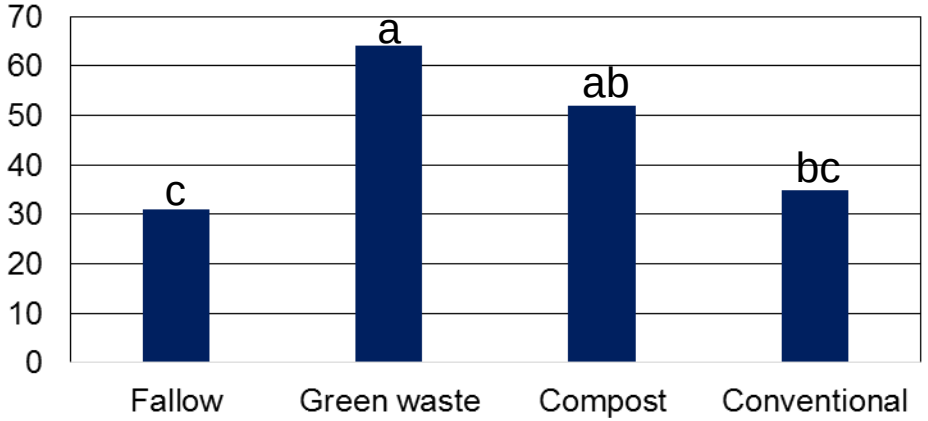
Shafter, 2014

	Cavity spot (%)	
	Feb 18	Aug 26
Fallow	41 a	18 a
Green waste	35 a	17 a
Compost	22 a	13 a
Conventional	19 a	26 a

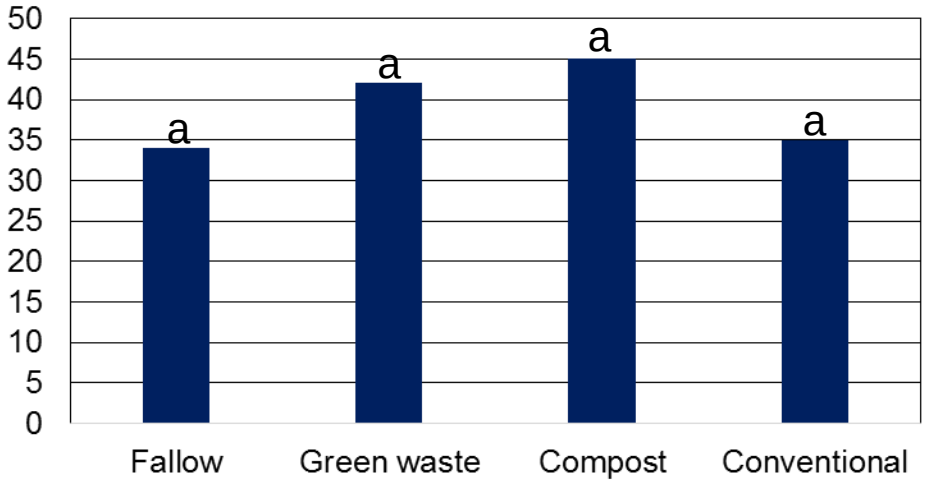

Pythium
cfu/ g soil
30
20
10
b
b
a
b
Culturable bacteria
colonies/g soil x10^6
90
60
30
b
a
a
a
Culturable fungi
colonies/g soil x10^5
0.3
0.2
0.1
c
bc
a
ab
Green waste
Compost
Conventional
Fallow

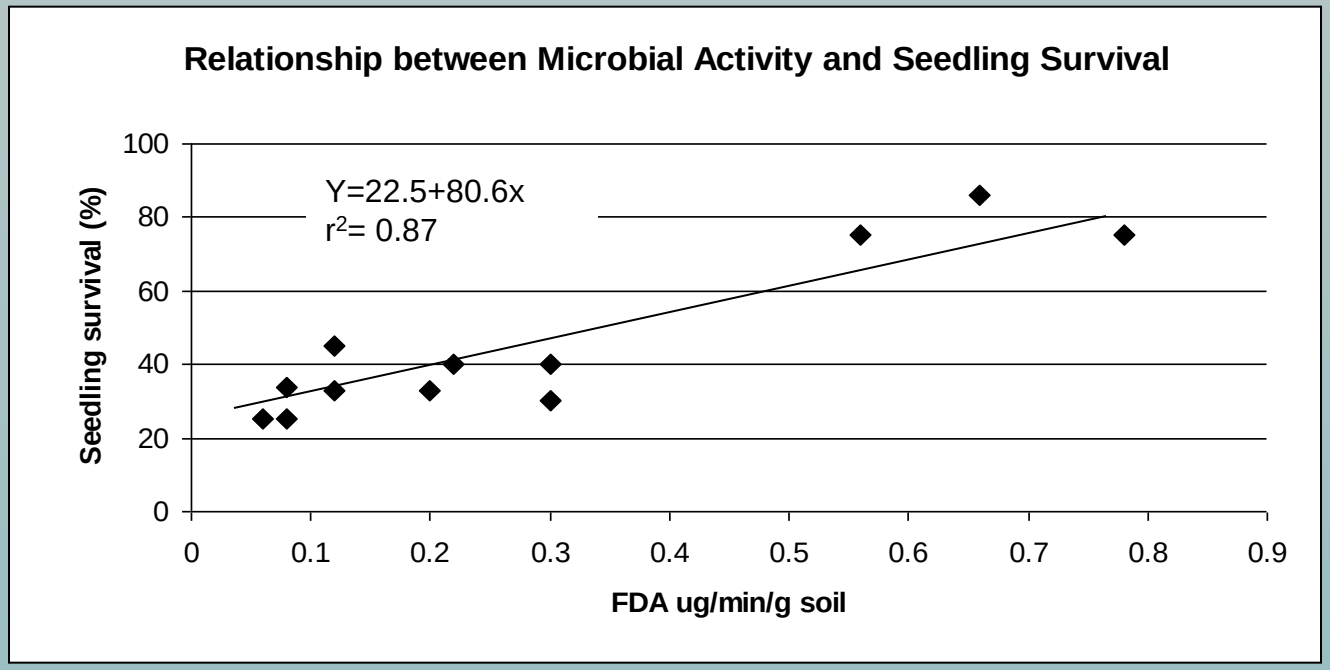

Relative Microbial Activity, 2012-2014
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
a
b
ab
a
Fallow
Green waste
Compost
Conventional

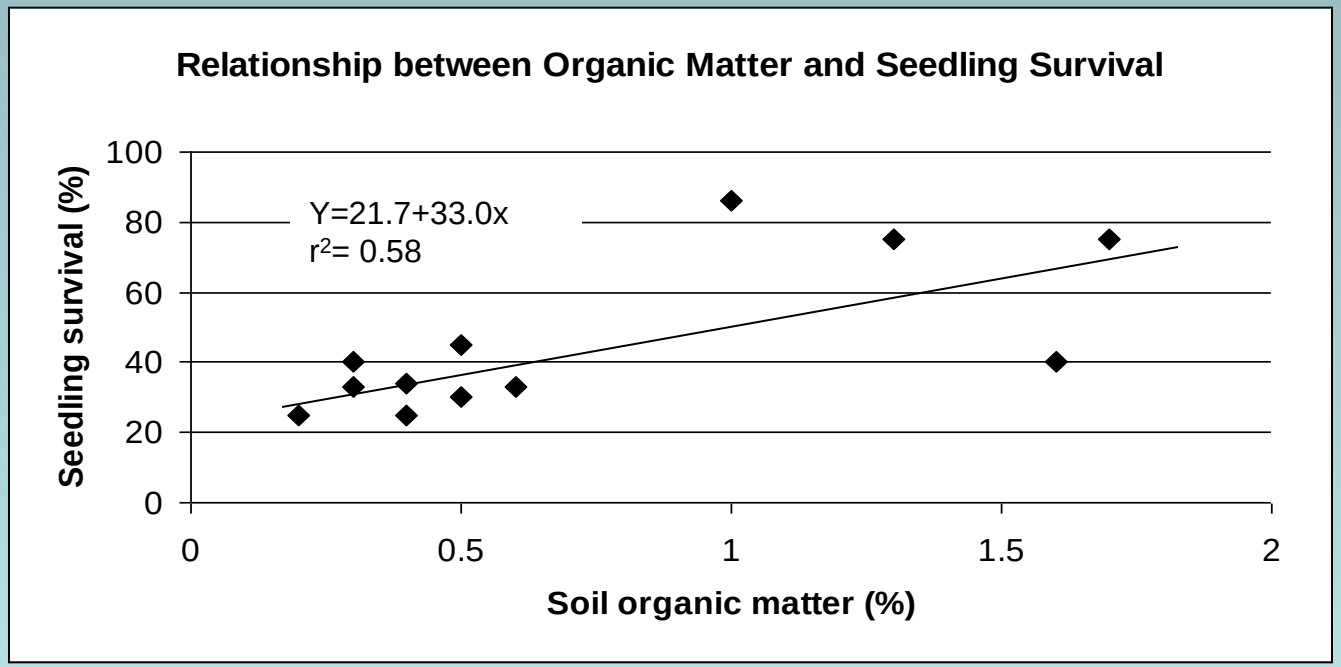
Seedling survival (%), one month after green waste and compost incorporation, 2012-2014



Seedling survival (%), 2012-2014

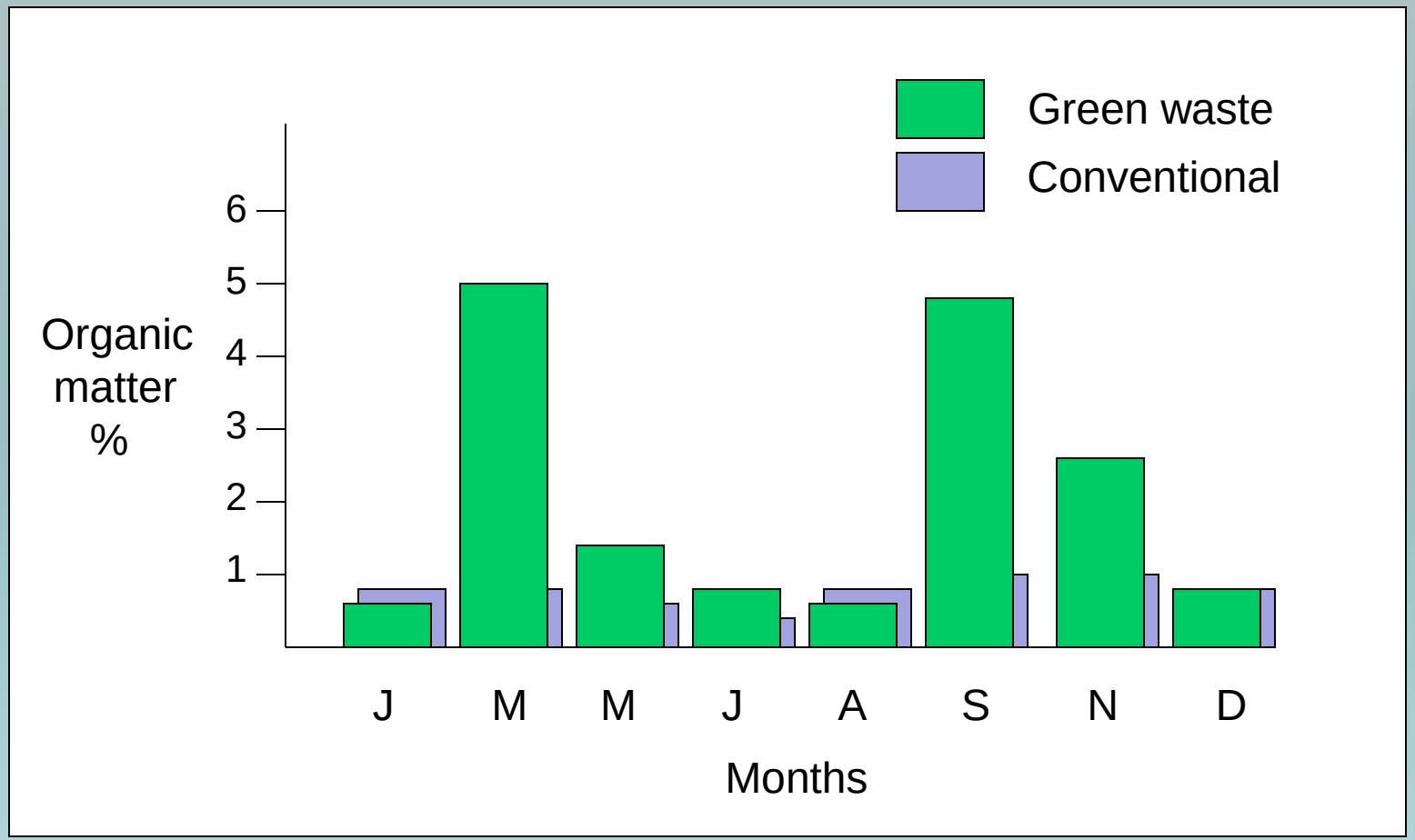



Relationship between Microbial Activity and Seedling Survival
Y=22.5+80.6x
r2= 0.87
Seedling survival (%)
FDA ug/min/g soil
0
20
40
60
80
100
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9


Relationship between Organic Matter and Seedling Survival
Y=21.7+33.0x
r2= 0.58
Seedling survival (%)
Soil organic matter (%)
0
20
40
60
80
100
0
0.5
1
1.5
2

Organic matter (%) in four cropping systems averaged over multiple time points in 2013 and a single terminal measurement in 2014

	2013	Aug 2014
Fallow	1.1	0.8
Green manure	2.3	2.4
Composted manure	1.6	3.5
Metam	1.4	0.7


Green waste
Conventional
Organic matter %
6
5
4
3
2
1
J
M
M
J
A
S
N
D
Months

Creating a Disease-Suppressive Soil

- Organic matter encourages microbial activity
- Encourage all antagonists, not a specific one