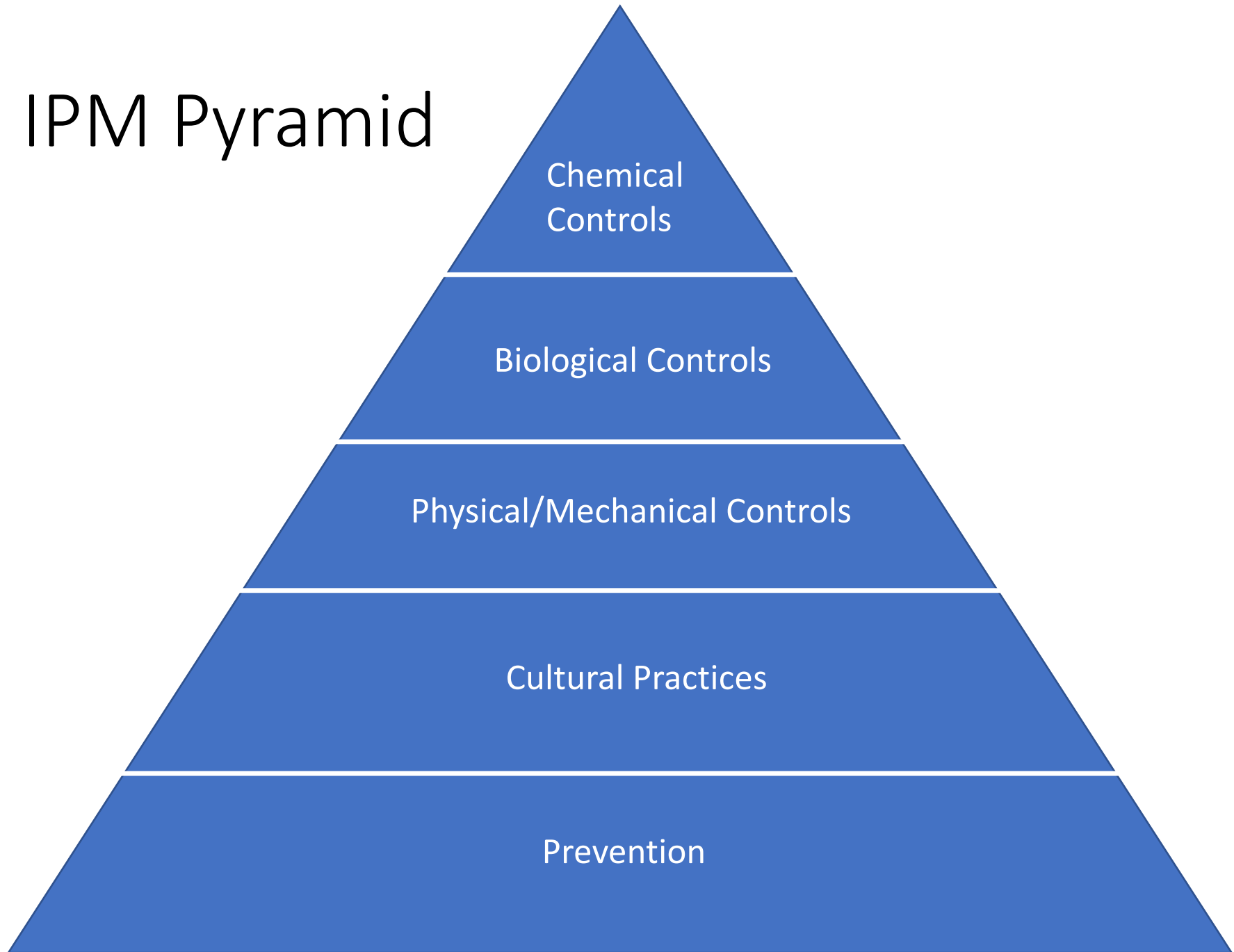


Weed management in vegetables using IPM

Bryan Brown, bryan.brown@cornell.edu
New York State Integrated Pest Management



IPM Pyramid



2015

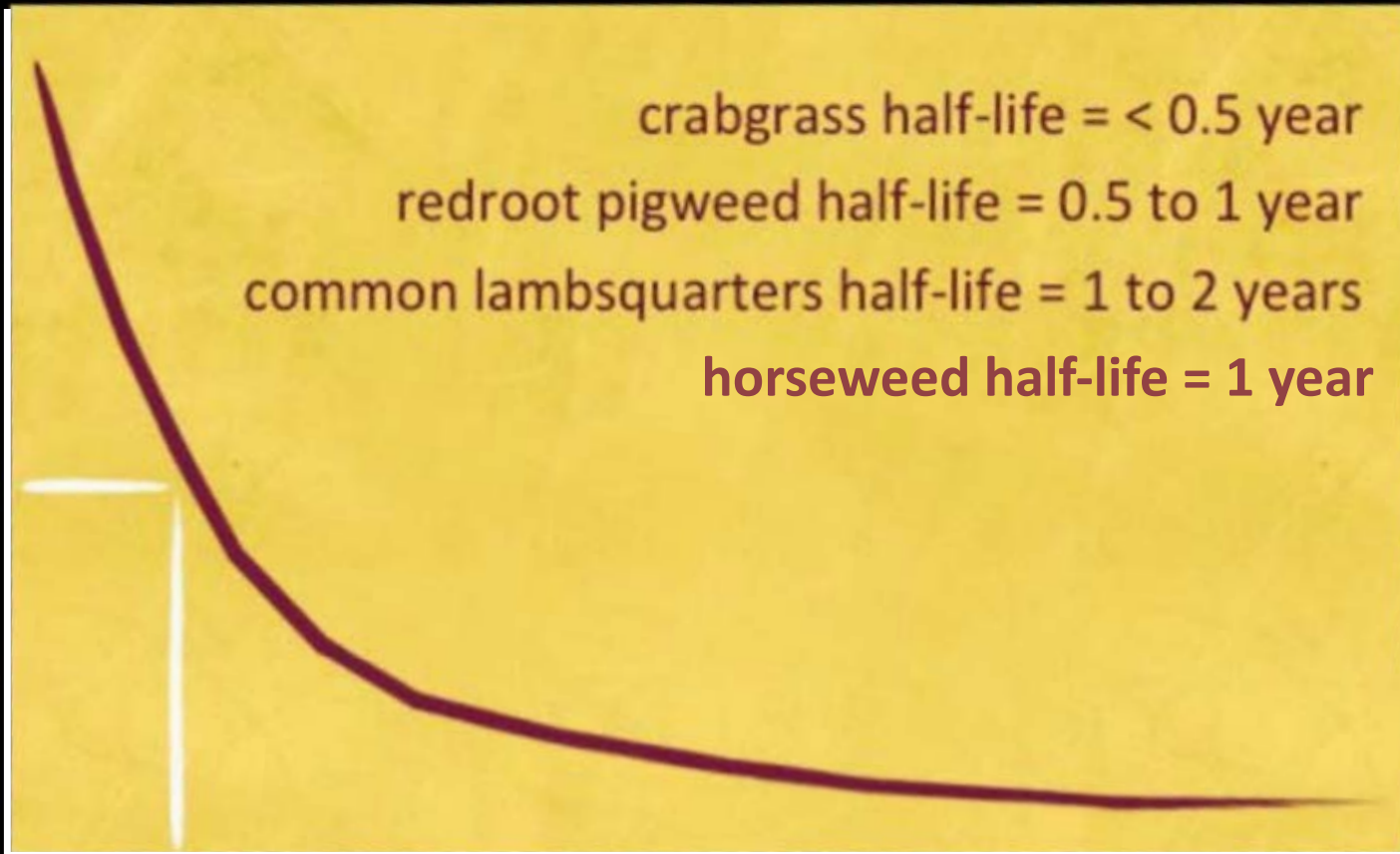


2016



Weed seed longevity

Viable
weed
seeds



← "half-life"

Time

Weed seedbanks



- 2,000 to 4,000 seeds/sq ft of soil
- These farmers control weeds only enough to avoid yield loss

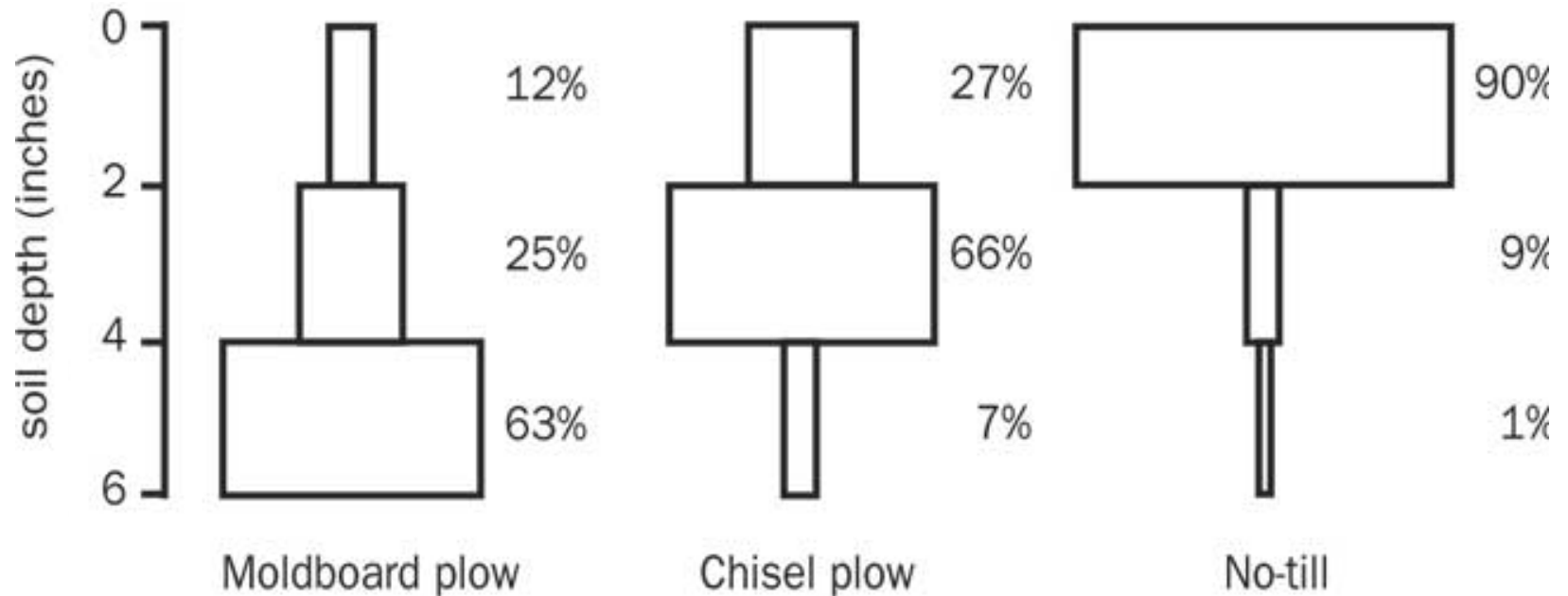
- 50 seeds/sq ft of soil
- These farmers prevent weed seeds from entering their soil

Weed Zapper

- Preferred Grain



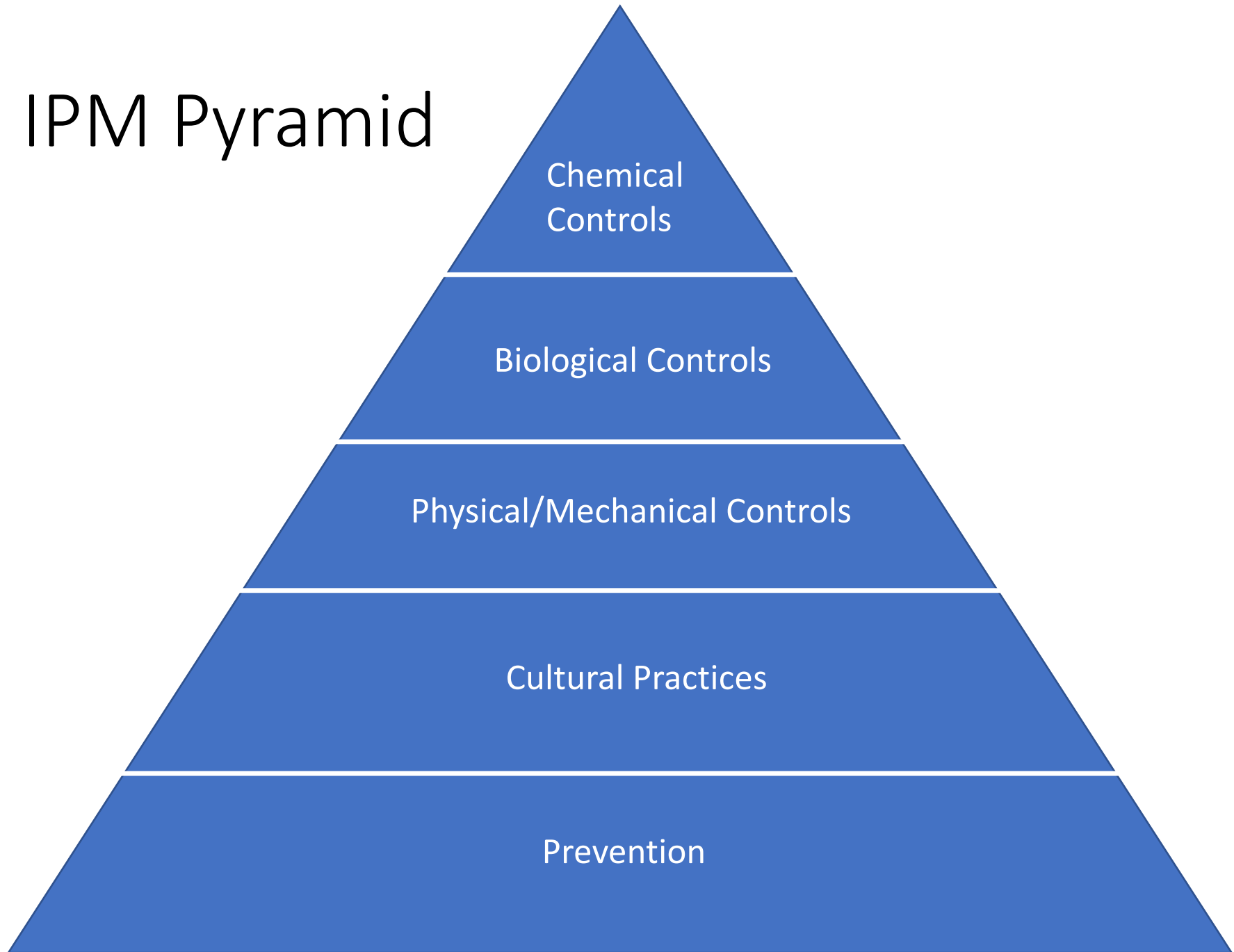
Deal with weed seeds



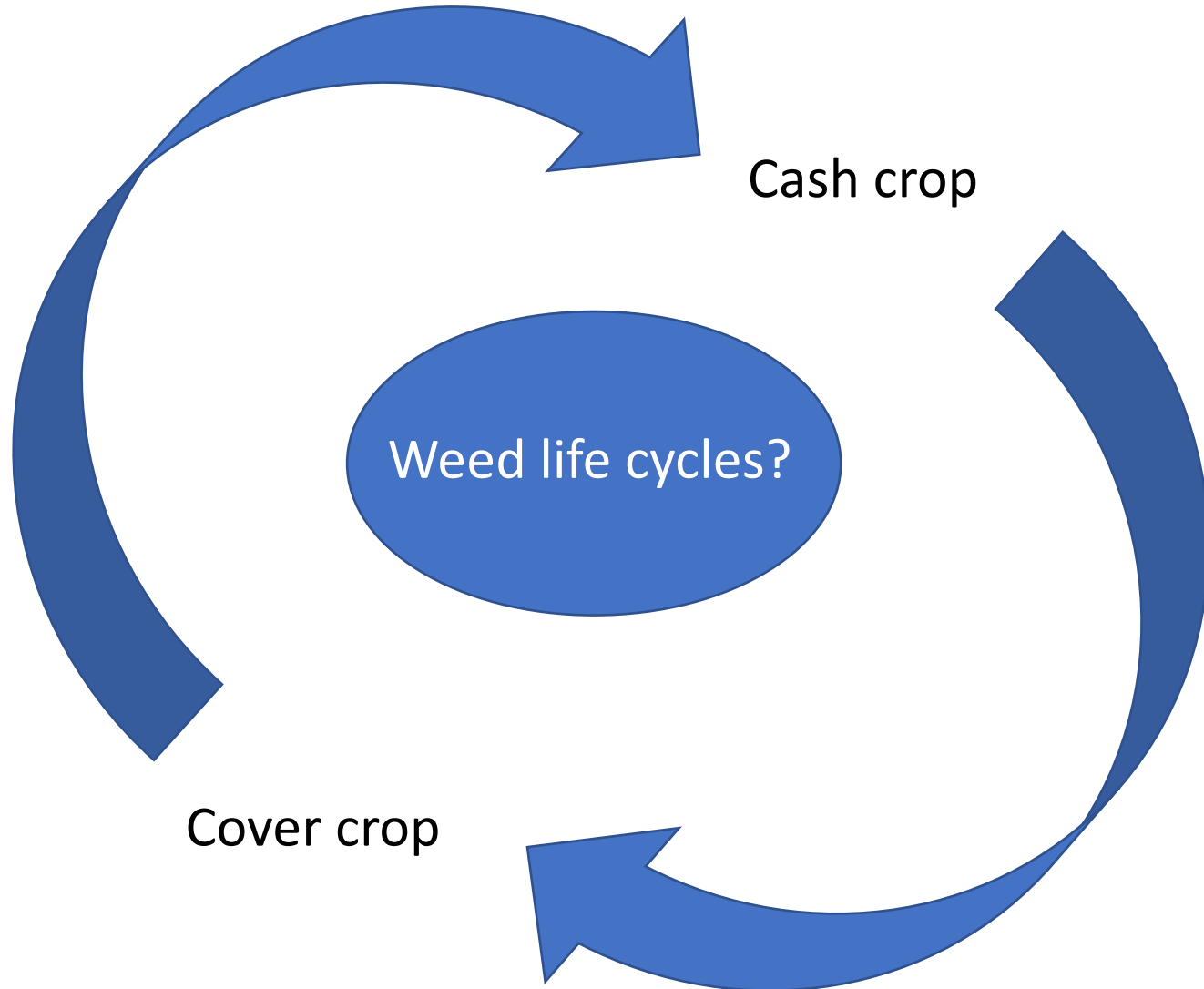
Get them to germinate:
Stale seedbed

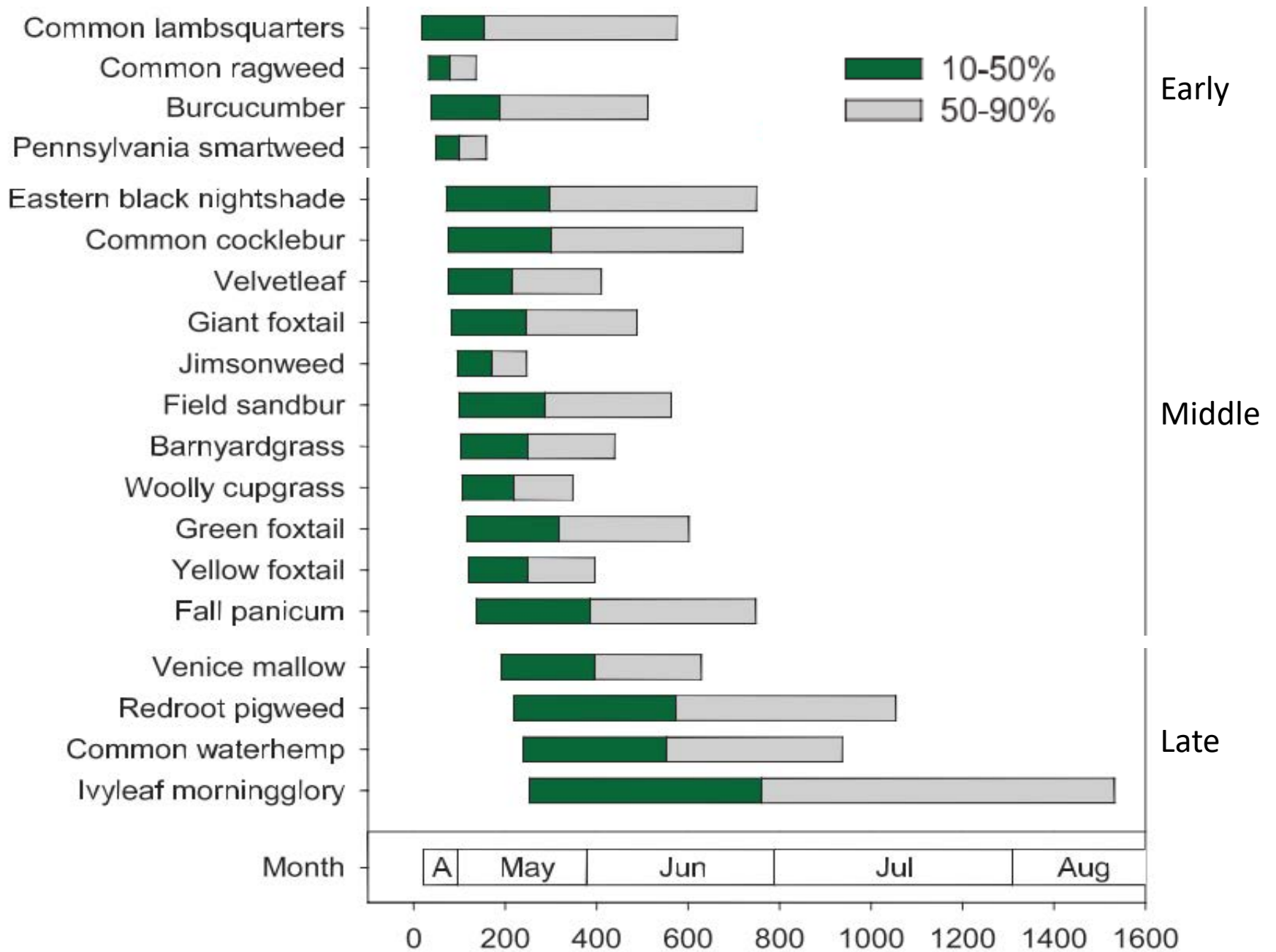


IPM Pyramid



Crop Rotation, Cover Cropping





Summer Annual Weed Seed Production



Mulch





Elderberry Pond Farm



Spring-seeded
buckwheat
between plastic



Elderberry Pond Farm

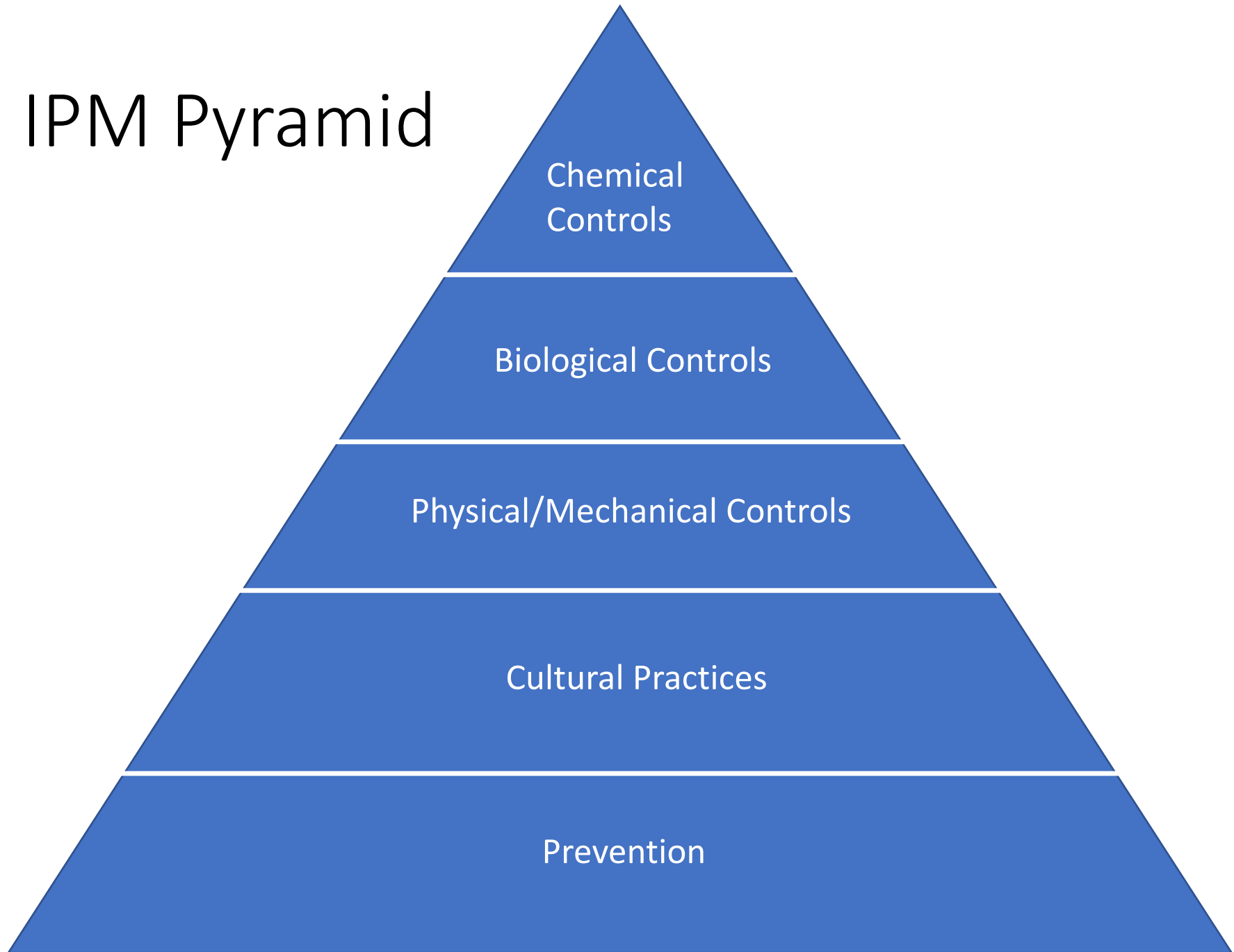


Fall-seeded rye
with 2-use
plastic mulch



Solarization	Landscape fabric	Black silage tarp
Kill weed seeds, pathogens, and nematodes	Prevent weeds on walkways/beds. Permeable	Termination of existing vegetation, perennials. No need to bury edges. OK in cool weather
\$80 per 1000 sq ft	\$70 per 1000 sq ft	\$35 per 1000 sq ft

IPM Pyramid

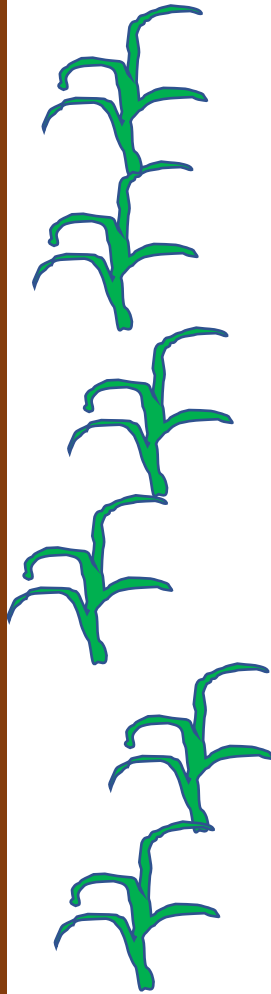




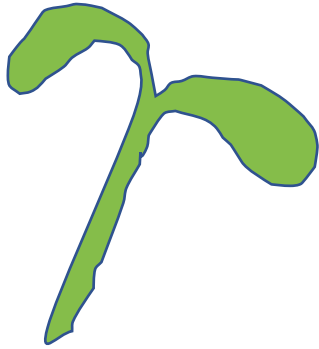
Guidance Systems



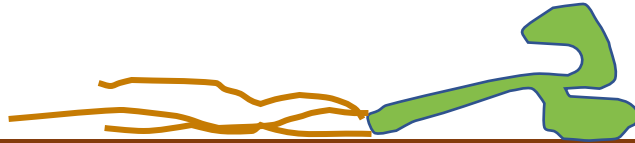
Straight Rows Improve Effectiveness



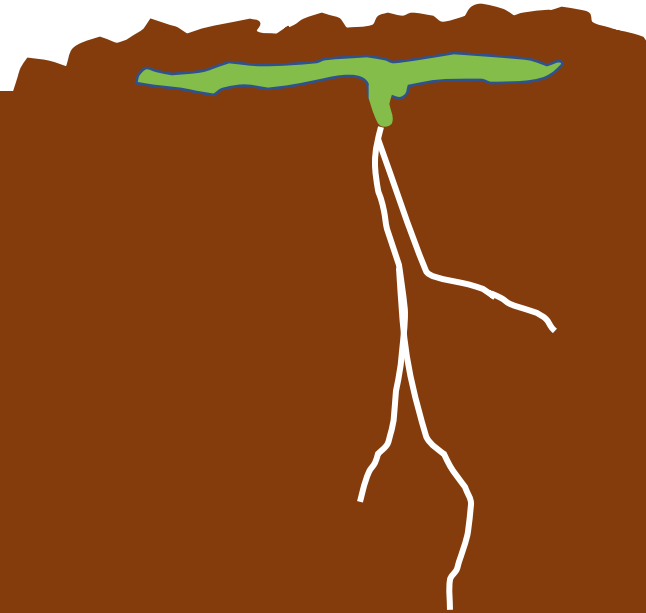
Cut



Uprooted



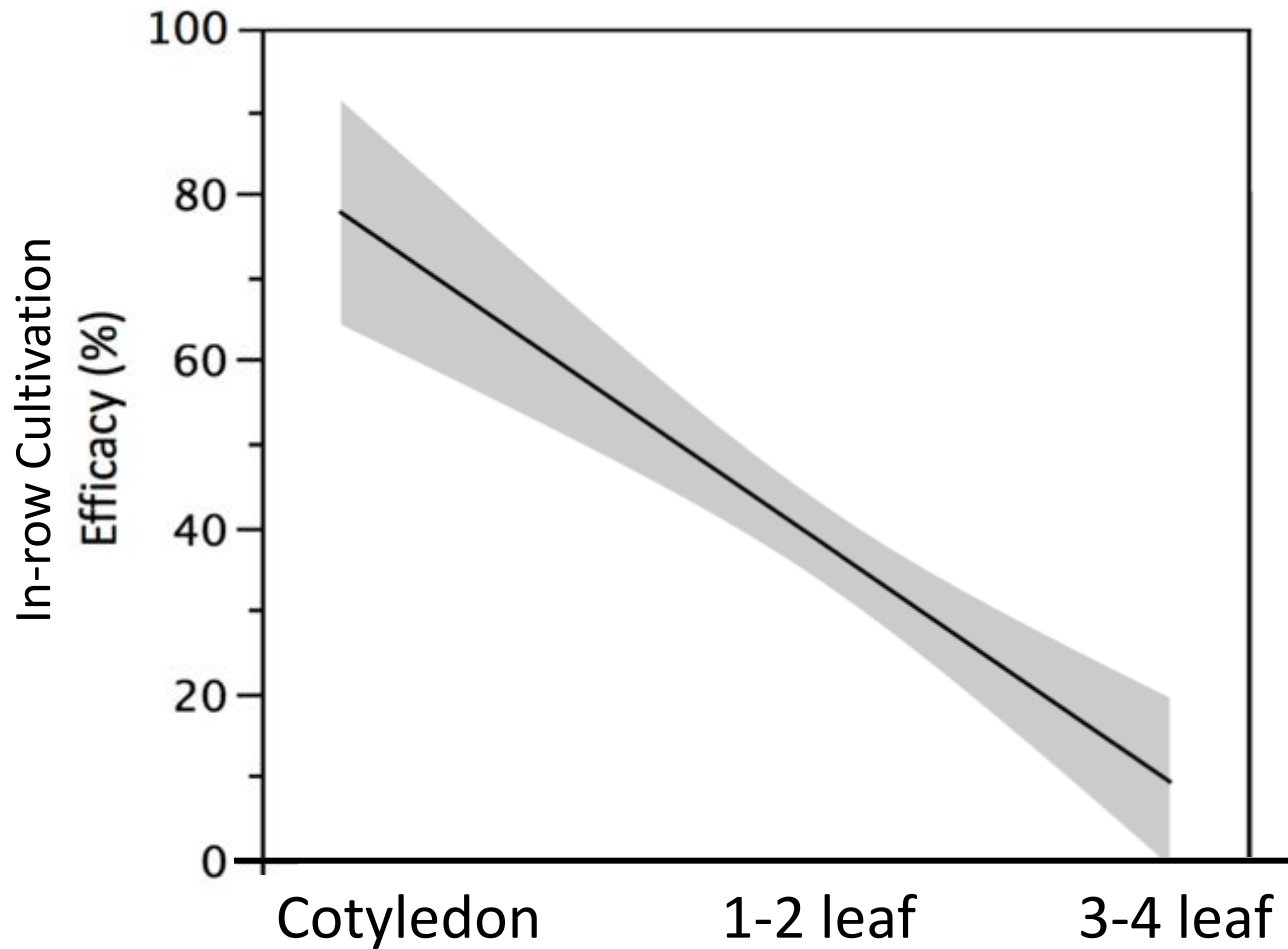
Buried



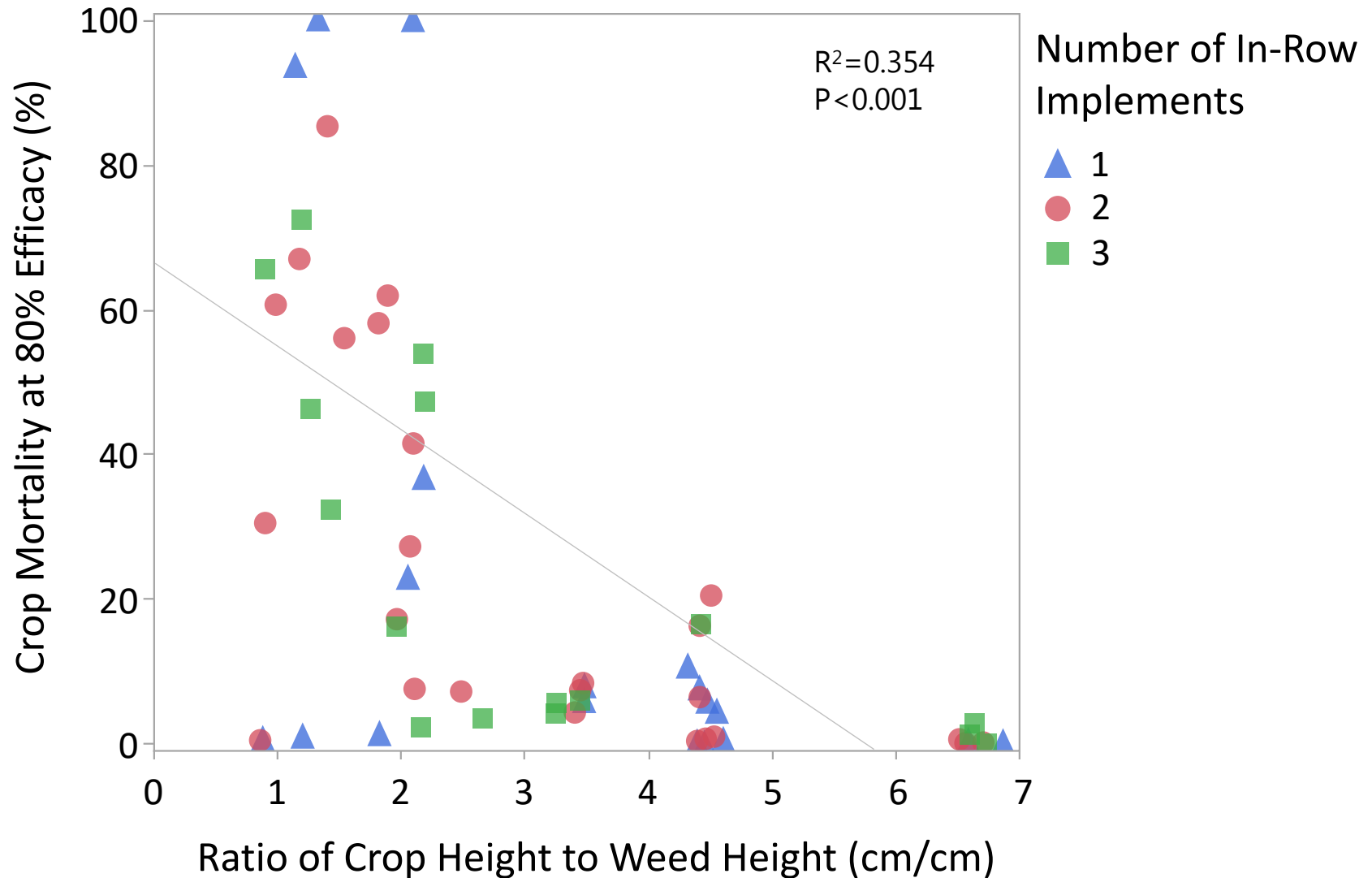
Sweeps, Fingers, Disk Hiller



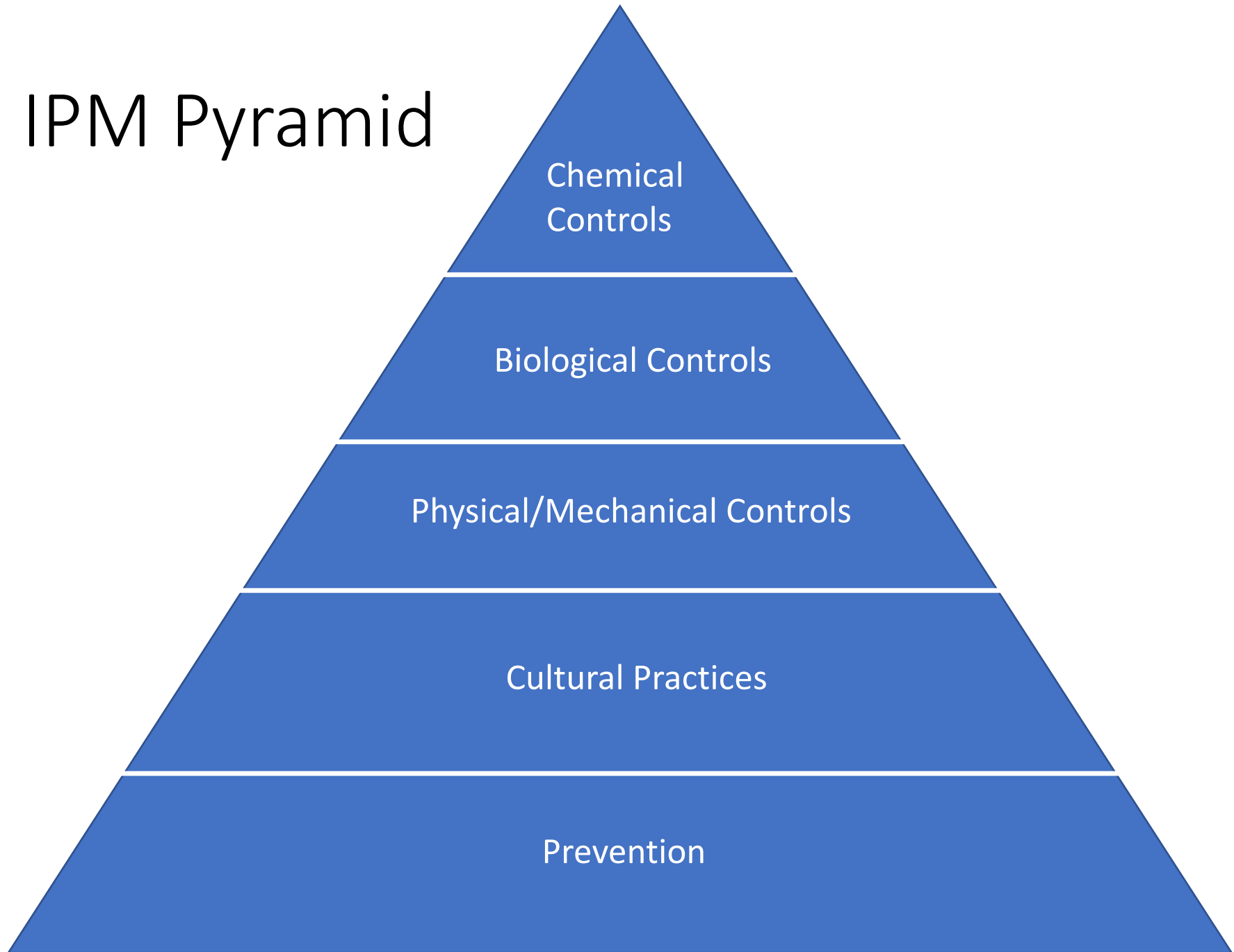
For In-row Cultivation, Timing is VERY Important



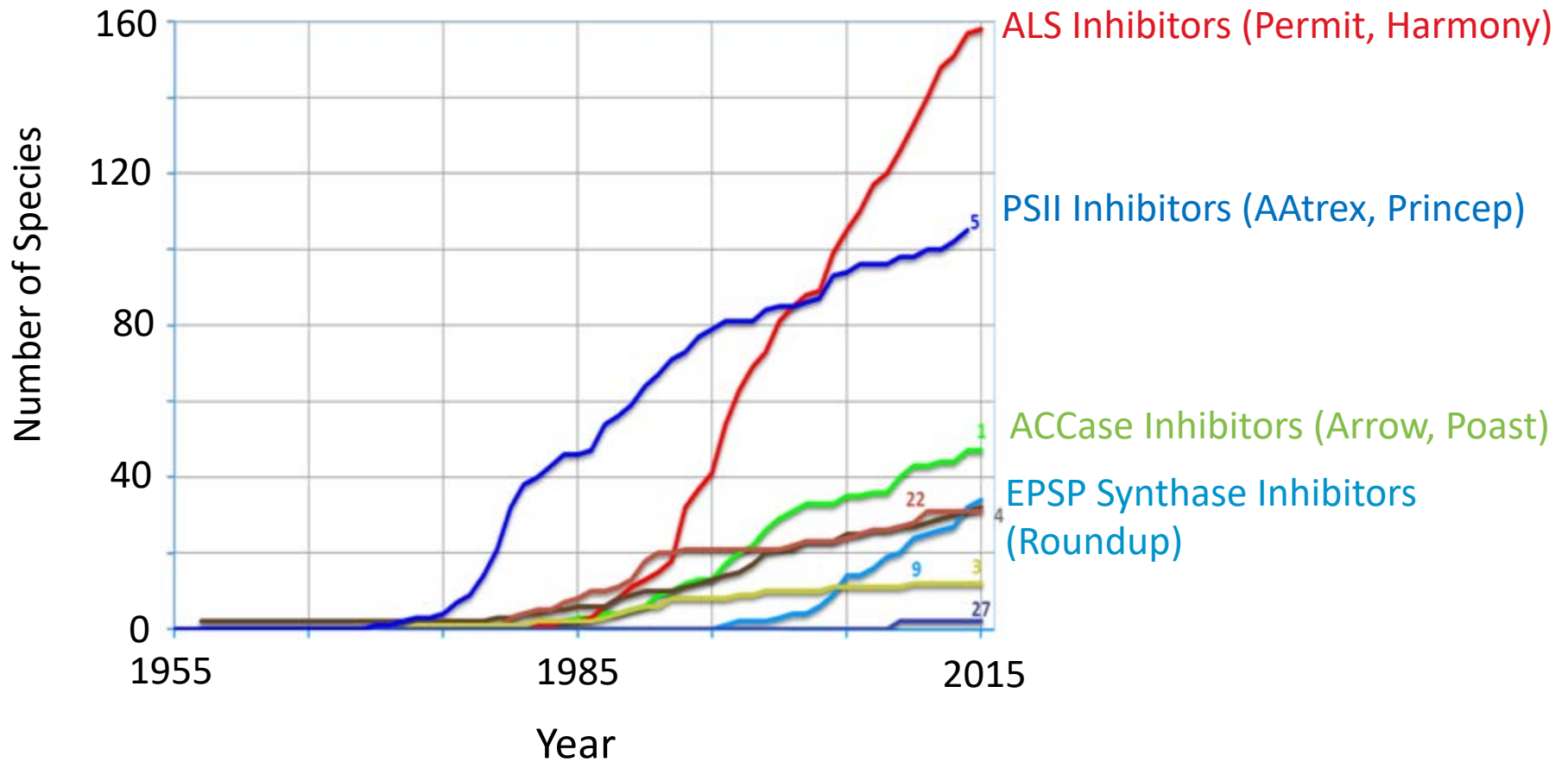
Height Ratio Critical for Selectivity



IPM Pyramid



Herbicide Resistant Weeds (Worldwide)



(Heap 2016)

Rotate Modes of Action

1	LEAD STRATEGIC INITIATIVES	1	Leadership	Strategic	Strategic
2	LEAD AND STRATEGIC INITIATIVES	2	Leadership	Strategic	Strategic
3	LEAD STRATEGIC INITIATIVES	3	Leadership	Strategic	Strategic
4	LEAD STRATEGIC INITIATIVES	4	Leadership	Strategic	Strategic
5	LEAD STRATEGIC INITIATIVES	5	Leadership	Strategic	Strategic
6	LEAD STRATEGIC INITIATIVES	6	Leadership	Strategic	Strategic
7	LEAD STRATEGIC INITIATIVES	7	Leadership	Strategic	Strategic
8	LEAD STRATEGIC INITIATIVES	8	Leadership	Strategic	Strategic
9	LEAD STRATEGIC INITIATIVES	9	Leadership	Strategic	Strategic
10	LEAD STRATEGIC INITIATIVES	10	Leadership	Strategic	Strategic
11	LEAD STRATEGIC INITIATIVES	11	Leadership	Strategic	Strategic
12	LEAD STRATEGIC INITIATIVES	12	Leadership	Strategic	Strategic
13	LEAD STRATEGIC INITIATIVES	13	Leadership	Strategic	Strategic
14	LEAD STRATEGIC INITIATIVES	14	Leadership	Strategic	Strategic
15	LEAD STRATEGIC INITIATIVES	15	Leadership	Strategic	Strategic
16	LEAD STRATEGIC INITIATIVES	16	Leadership	Strategic	Strategic
17	LEAD STRATEGIC INITIATIVES	17	Leadership	Strategic	Strategic
18	LEAD STRATEGIC INITIATIVES	18	Leadership	Strategic	Strategic
19	LEAD STRATEGIC INITIATIVES	19	Leadership	Strategic	Strategic
20	LEAD STRATEGIC INITIATIVES	20	Leadership	Strategic	Strategic
21	LEAD STRATEGIC INITIATIVES	21	Leadership	Strategic	Strategic

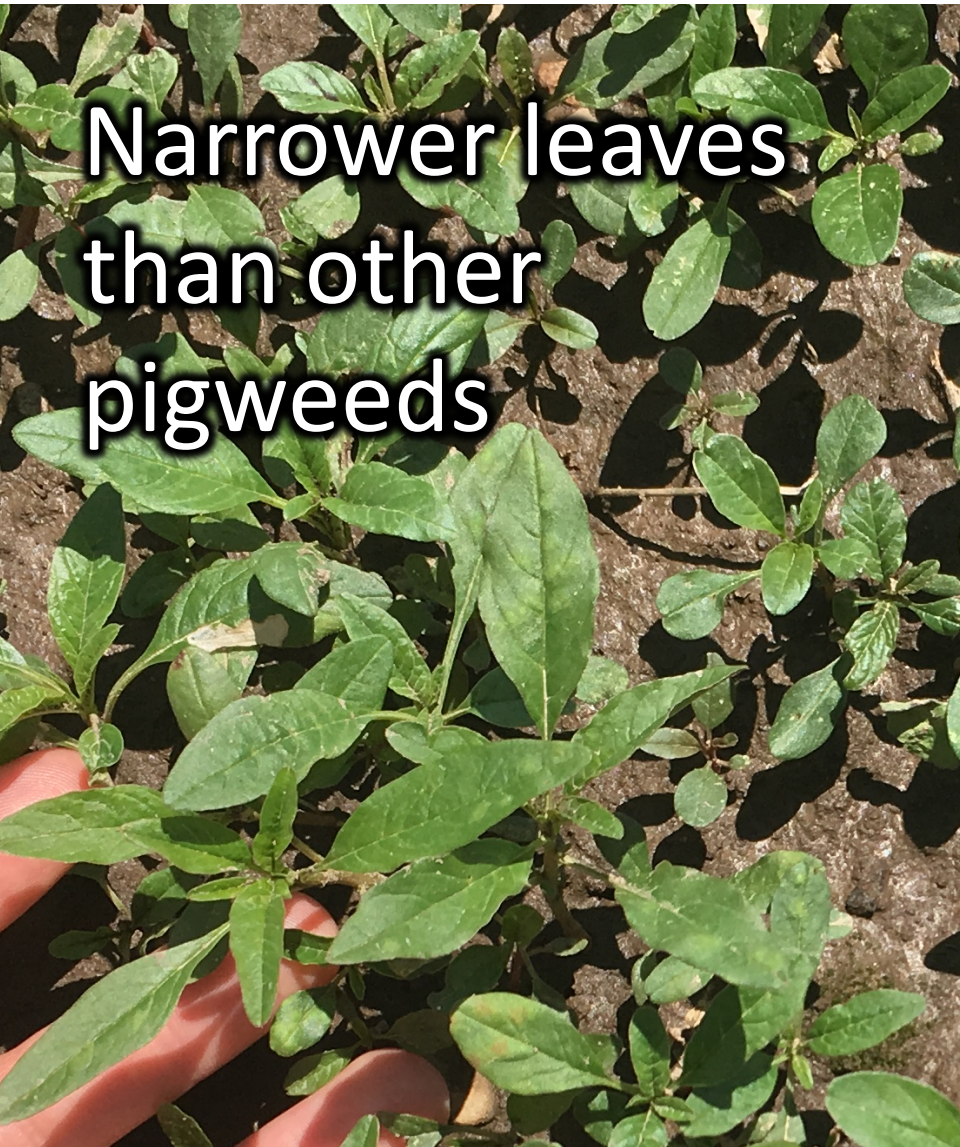


2,4-D
Dicamba
Stinger
Grandstand
others...





Waterhemp



Narrower leaves
than other
pigweeds



Hairless

Horseweed



Goldenrod



Herbicide	WSSA group	Annual grasses	Small-seeded broadleafs	Large-seeded broadleafs
Treflan	3	x	x	
Prowl H2O	3	x	x	
Prefar	8	x	x	
Command	13	x	x	x
Devrinol	15	x	x	
Dual Magnum	15	x	x	
Sandea	2		x	x
Goal Tender	14		x	x
Aim	14		x	x
Stinger	4		x	x
Select	1	x		

Herbicide	WSSA group	Annual grasses	Small-seeded broadleafs	Large-seeded broadleafs	PRE	POST
Treflan	3	X	X		X	
Prowl H2O	3	X	X		X	
Prefar	8	X	X		X	
Command	13	X	X	X	X	
Devrinol	15	X	X		X	
Dual Magnum	15	X	X		X	
Sandea	2		X	X	X	X
Goal Tender	14		X	X	X	X
Aim	14		X	X		X
Stinger	4		X	X		X
Select	1	X				X

Broccoli Trials, South Carolina

- Herbicides applied prior to transplanting
- One cultivation 3 weeks later with Lilliston



Photo: John Shenk

Broccoli Trials, South Carolina

Table 3

Impact of herbicide and cultivation on percent weed control (0–100) in the 2017 Fall Trial 42 days after transplanting.^a

Herbicide Treatment	Cultivation Treatment	Percent Control		
		Yellow Foxtail	Common Purslane	Carpetweed
Napropamide	None	86 a	10 c	15 c
S-metolachlor	None	93 a	15 c	25 c
Oxyflurofen	None	87 a	20 c	25 c
Napropamide	Yes	96 a	55 b	63 b
S-metolachlor	Yes	96 a	88 a	91 a
Oxyflurofen	Yes	97 a	85 a	90 a

Common Lambsquarters



Common Ragweed



Velvetleaf



Galinsoga



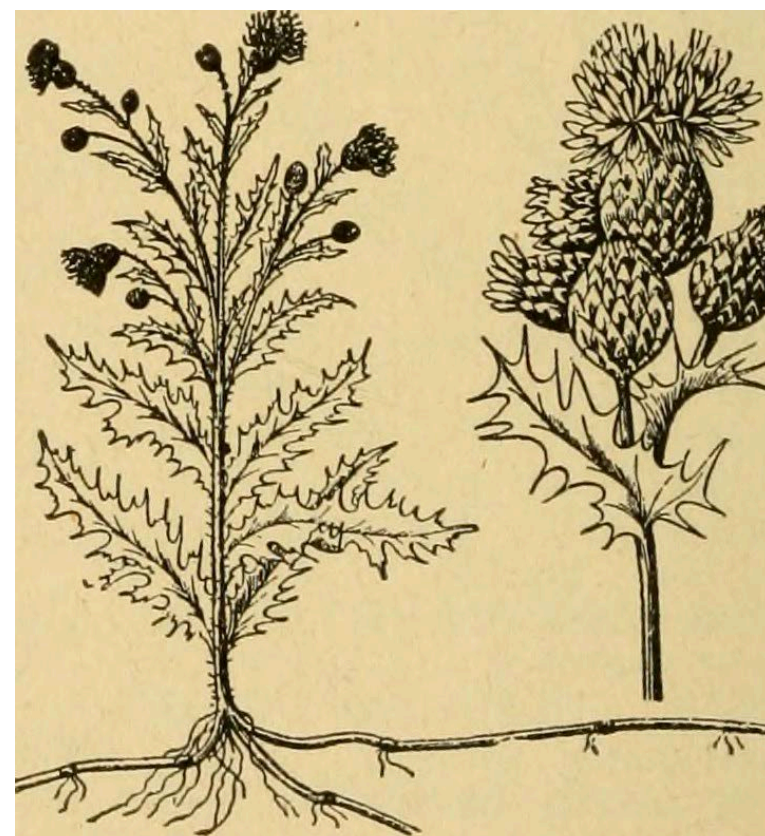
Ligule: papery, fringed, or none



Quackgrass

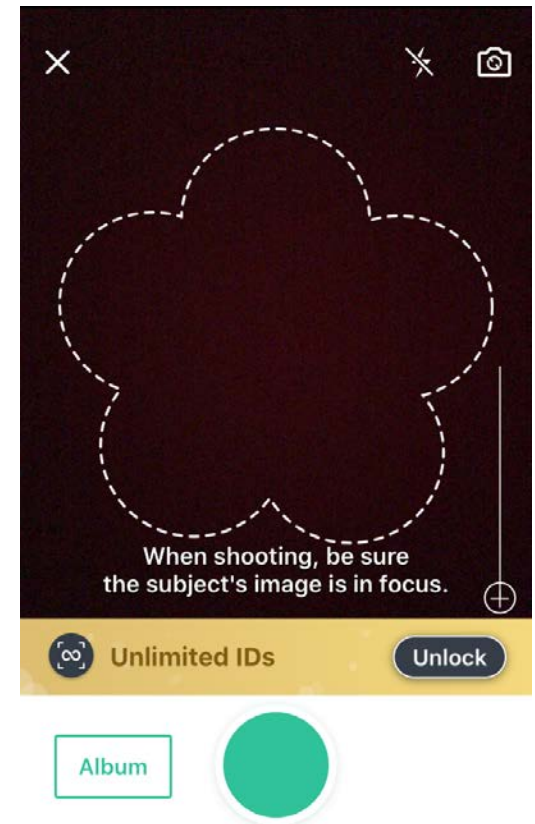
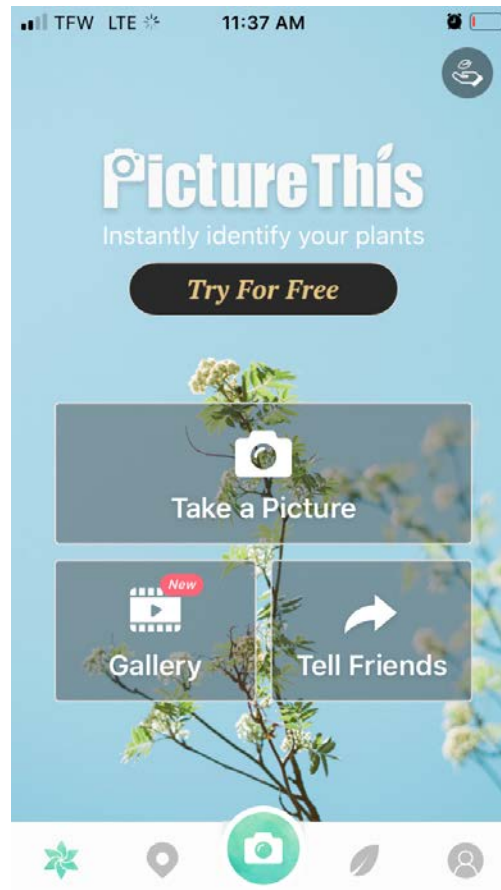


Canada Thistle



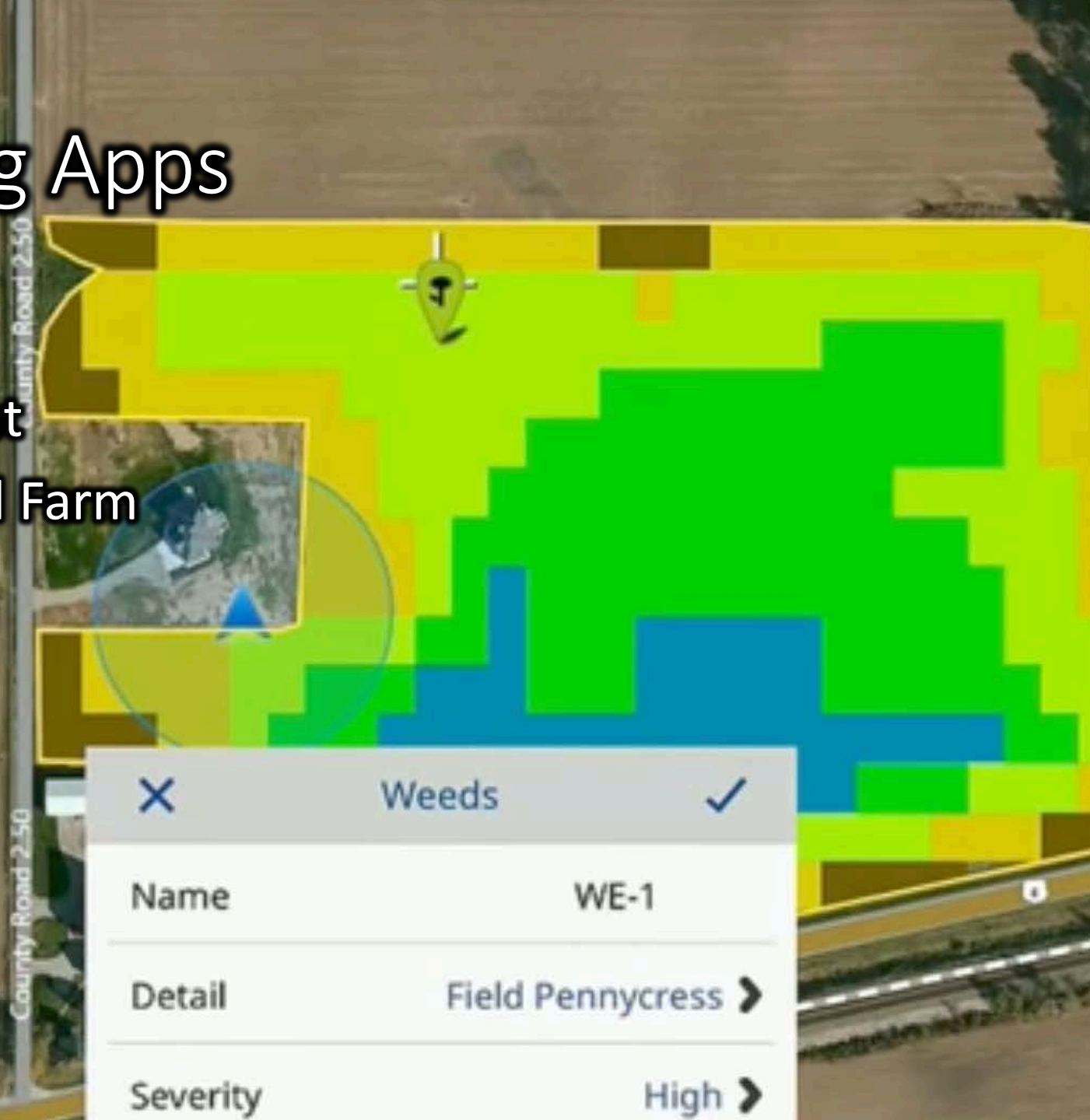
Weed ID Apps

- PictureThis
- Pl@ntNet
- iNaturalist



Scouting Apps

- ScoutPro
- eCropScout
- Connected Farm



Weeds	
Name	WE-1
Detail	Field Pennycress >
Severity	High >

Further Info

- <https://nysipm.cornell.edu/>

***Disclaimer:** Read pesticide labels prior to use. The information contained here is not a substitute for a pesticide label. Trade names used herein are for convenience only; no endorsement of products is intended, nor is criticism of unnamed products implied. Laws and labels change. It is your responsibility to use pesticides legally. Always consult with your local Cooperative Extension office for legal and recommended practices and products.*

