

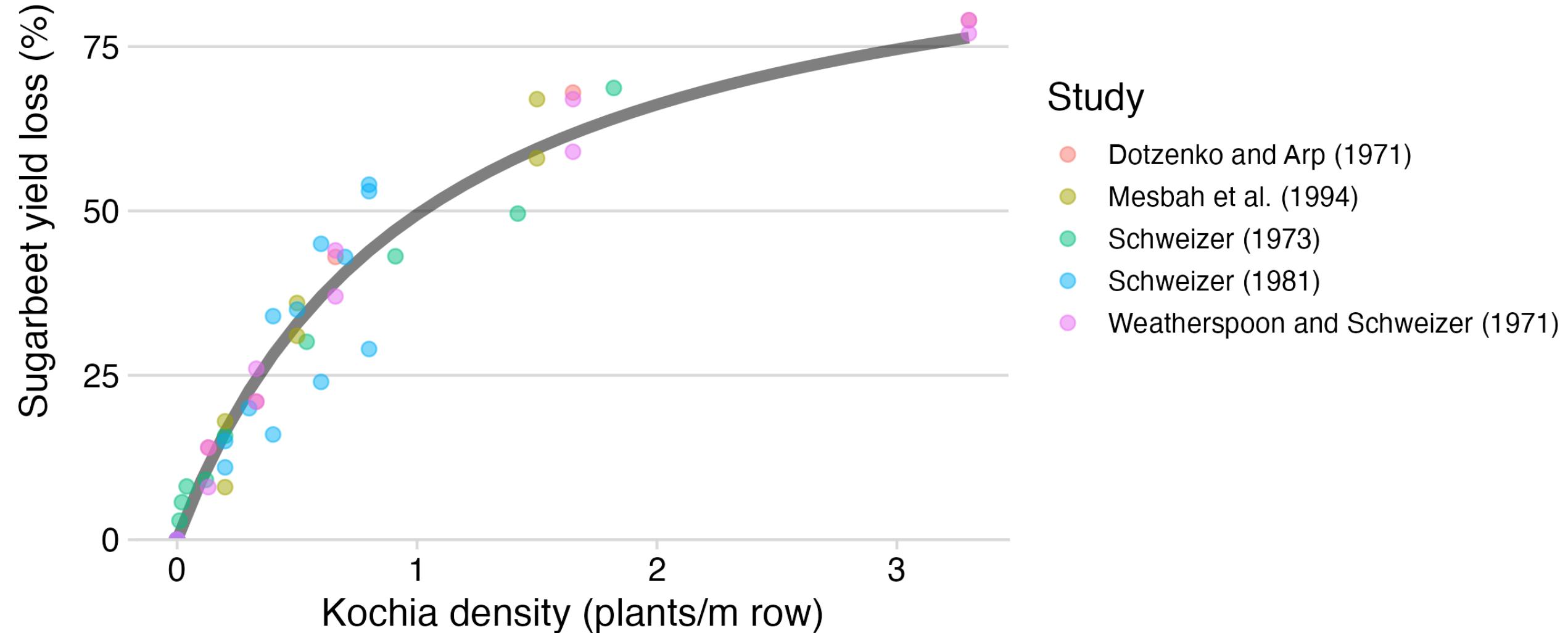
Forty years of kochia (*Bassia scoparia*) control with herbicides in sugar beet



Andrew Kniss



10 kochia per 100' of row = 25% yield loss



Kochia management in sugarbeet



Bob Wilson (UNL)



Steve Miller (UW)

Kochia control with POST herbicides

- 🐴 Efficacy data from year-end written reports:
 - Bob Wilson, UNL – 1984 through 1996
 - Steve Miller, UW – 1985 through 1996

Questions:

- ❖ Is kochia control inversely related to sugarbeet injury?
- ❖ What is the effect of:
 - Herbicide rate?
 - Herbicide timing?
 - Number of applications?
 - Tank-mixtures?
 - Adjuvants?
 - Sequential PRE + POST?

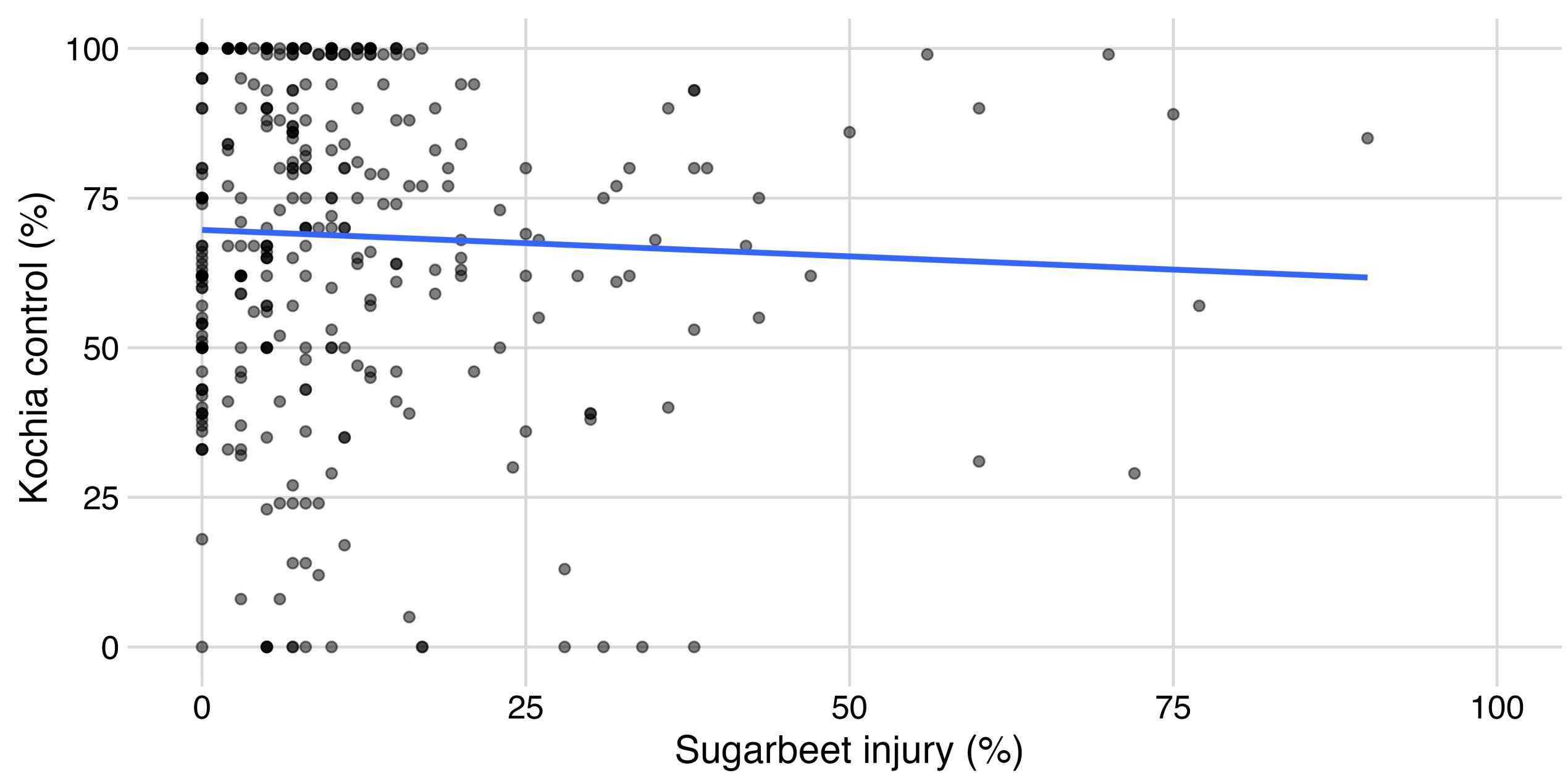


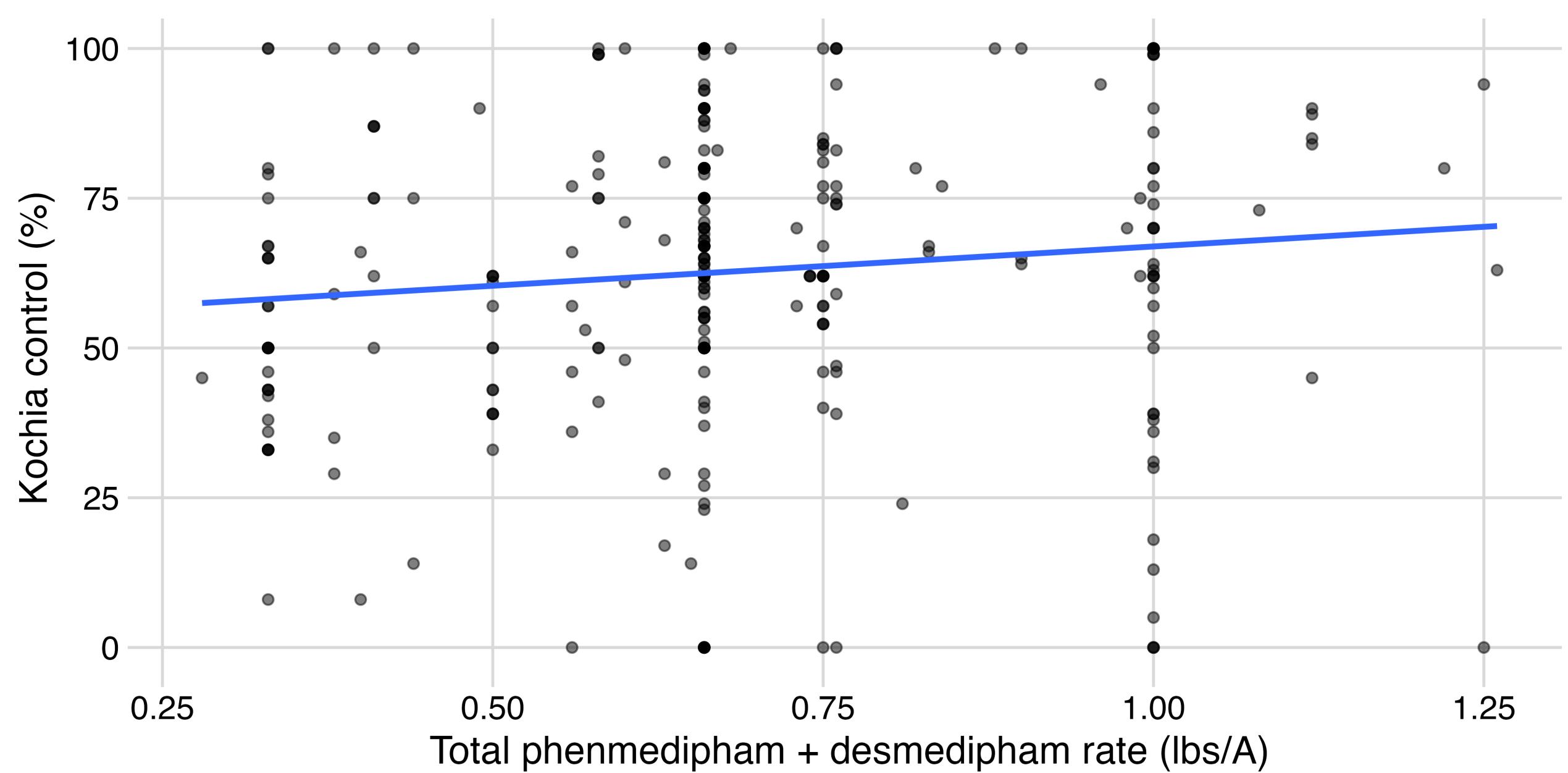
Kochia Efficacy Data, 1984-1996

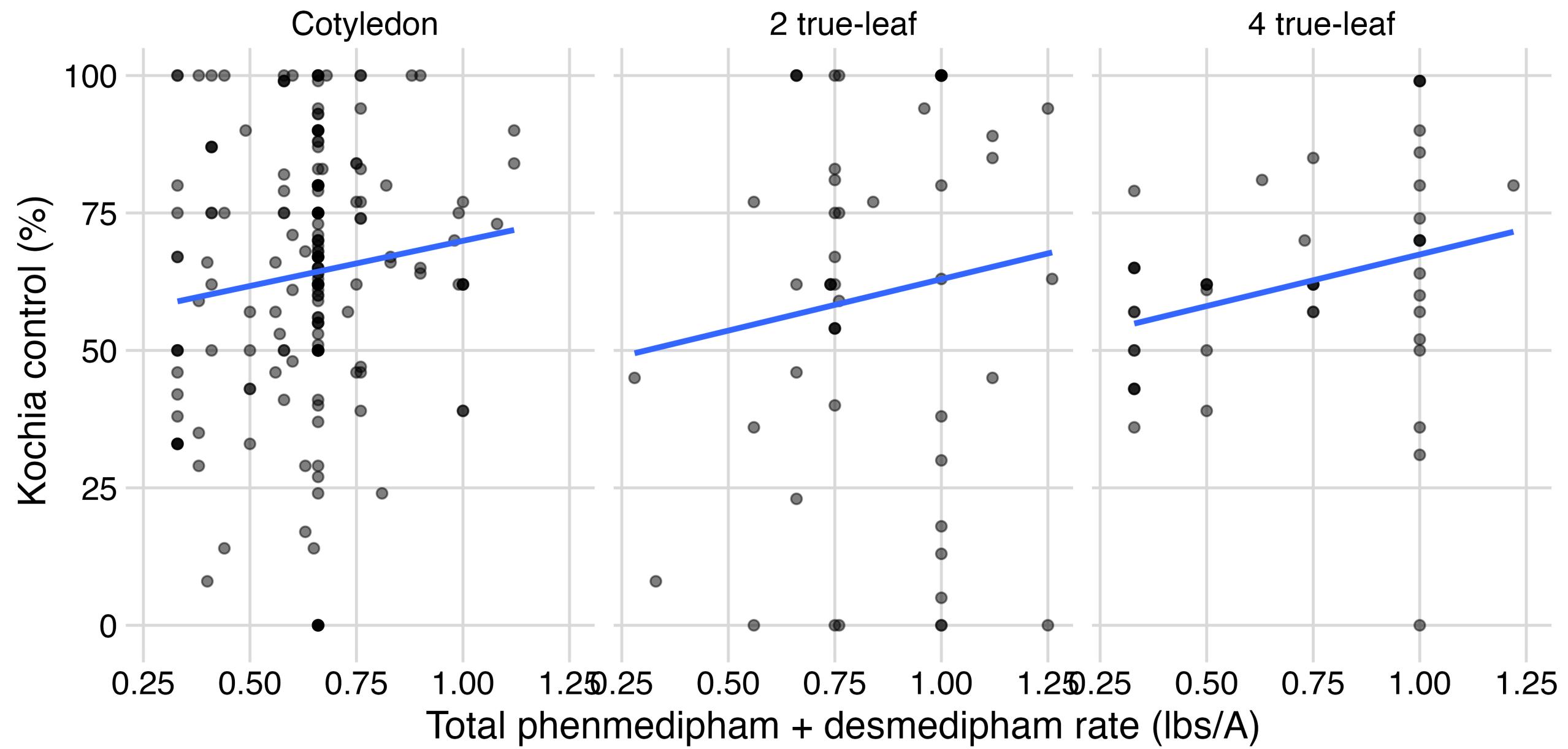
- ❶ Locations:
 - Scottsbluff & Mitchell, NE
 - Torrington & Powell, WY
- ❷ 33 studies provided kochia efficacy data from POST herbicides
 - 458 kochia efficacy observations
(each observation is mean of 3-4 replicates)

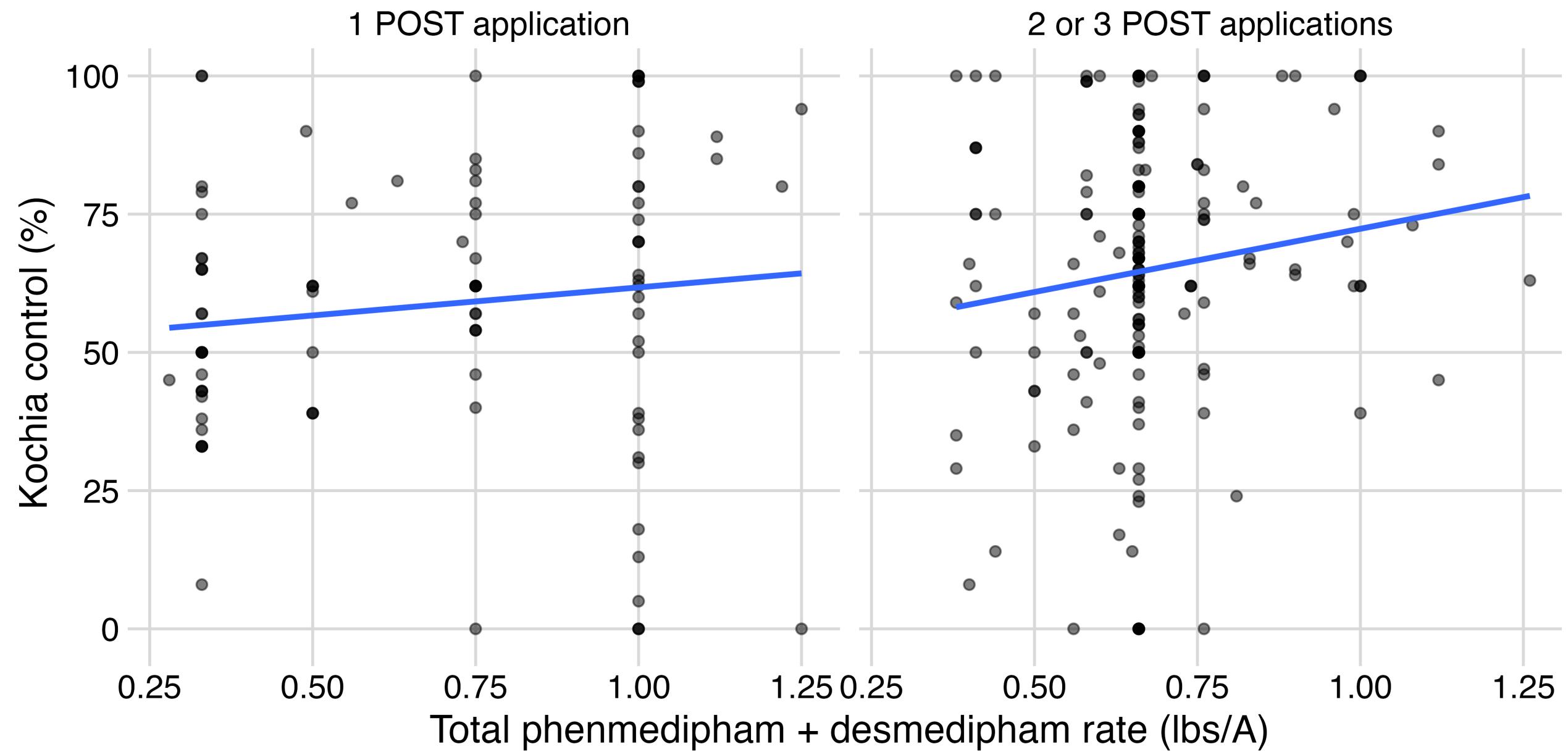
Kochia Efficacy Data, 1984-1996

- 🐴 72% of POST treatments included Betamix
 - phenmedipham + desmedipham
- 🐴 14% of POST treatments included Progress
 - phenmedipham + desmedipham + ethofumesate
- 🐴 29% of POST treatments included UpBeet
 - thifensulfuron

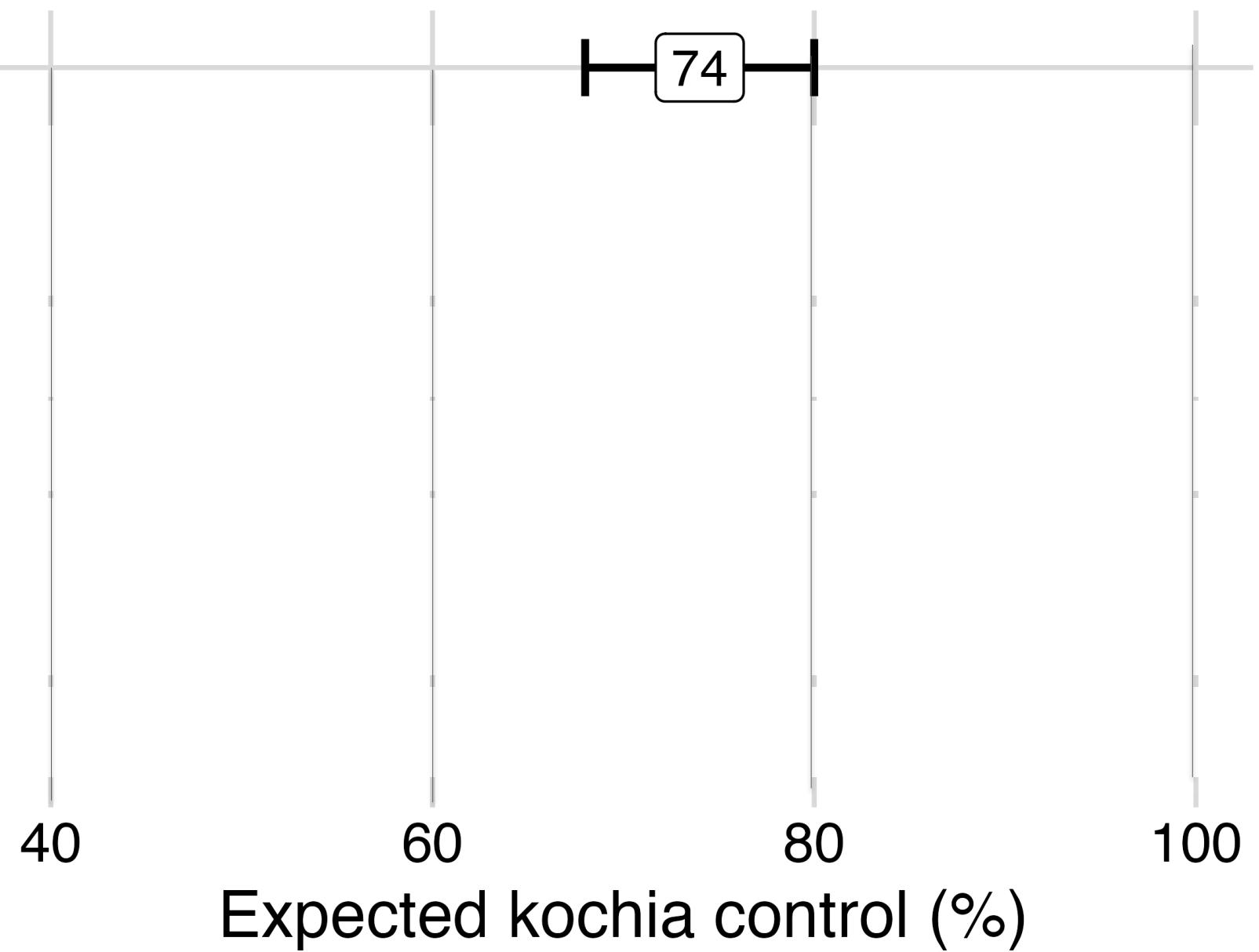




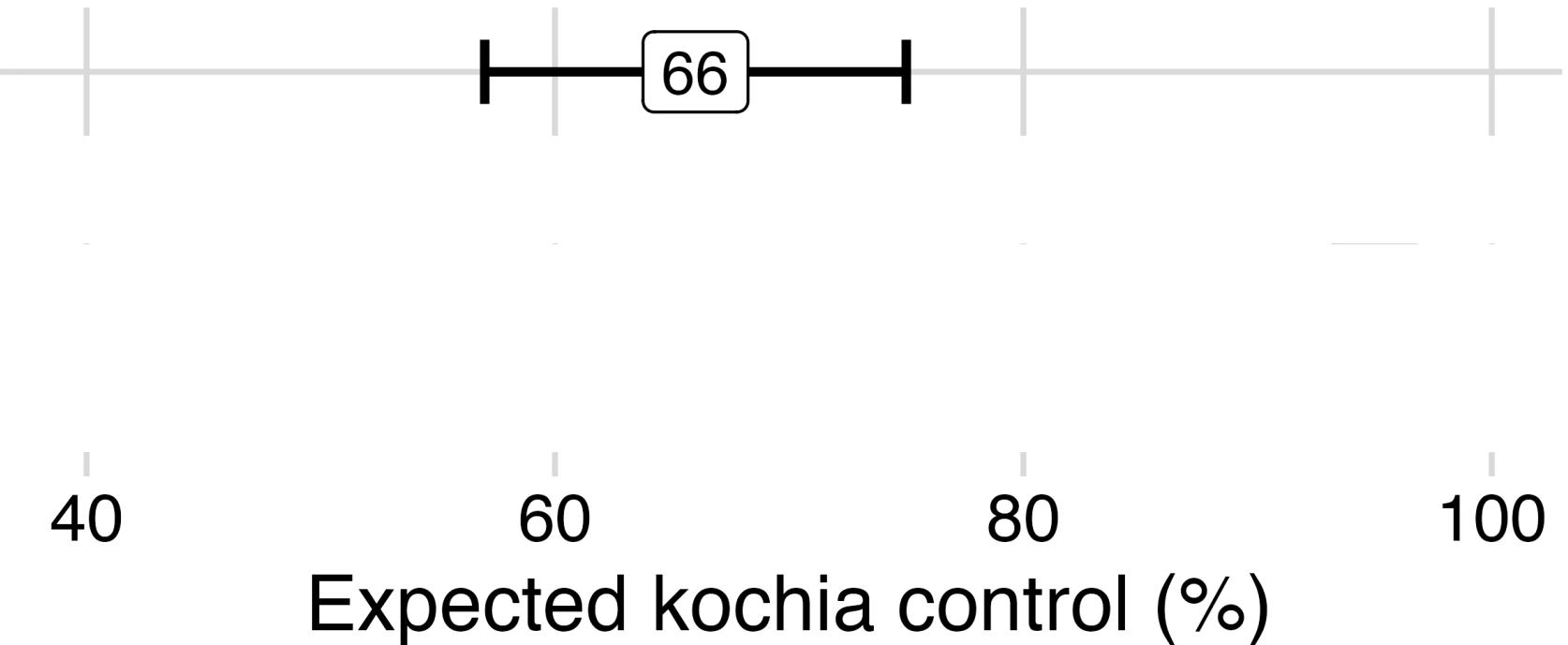




All POST treatments



Betamix alone



- Nortron + glyphosate for weed control in RR sugarbeet
- Glyphosate-resistant kochia control in corn-sugarbeet rotations
- Command (clomazone) herbicide for PRE weed control at sugarbeet planting
- Maximizing the efficacy of Nortron (ethofumesate) applied POST
- Investigating pre-plant burndown herbicide options in sugarbeet
- Influence of Proline plus glyphosate mixtures for kochia control
- Decision aid to reduce selection for herbicide resistant weeds
- Metamitron for sugarbeet safety and weed control efficacy
- Ultra Blazer herbicide in sugarbeet
- Metamitron under different irrigation systems
- Cover crops for weed management in sugarbeet
- Soil applied herbicides for crop safety and weed control potential
- Corn herbicides that allow rotation to sugarbeet
- Stale seedbed approach to manage herbicide-resistant weeds

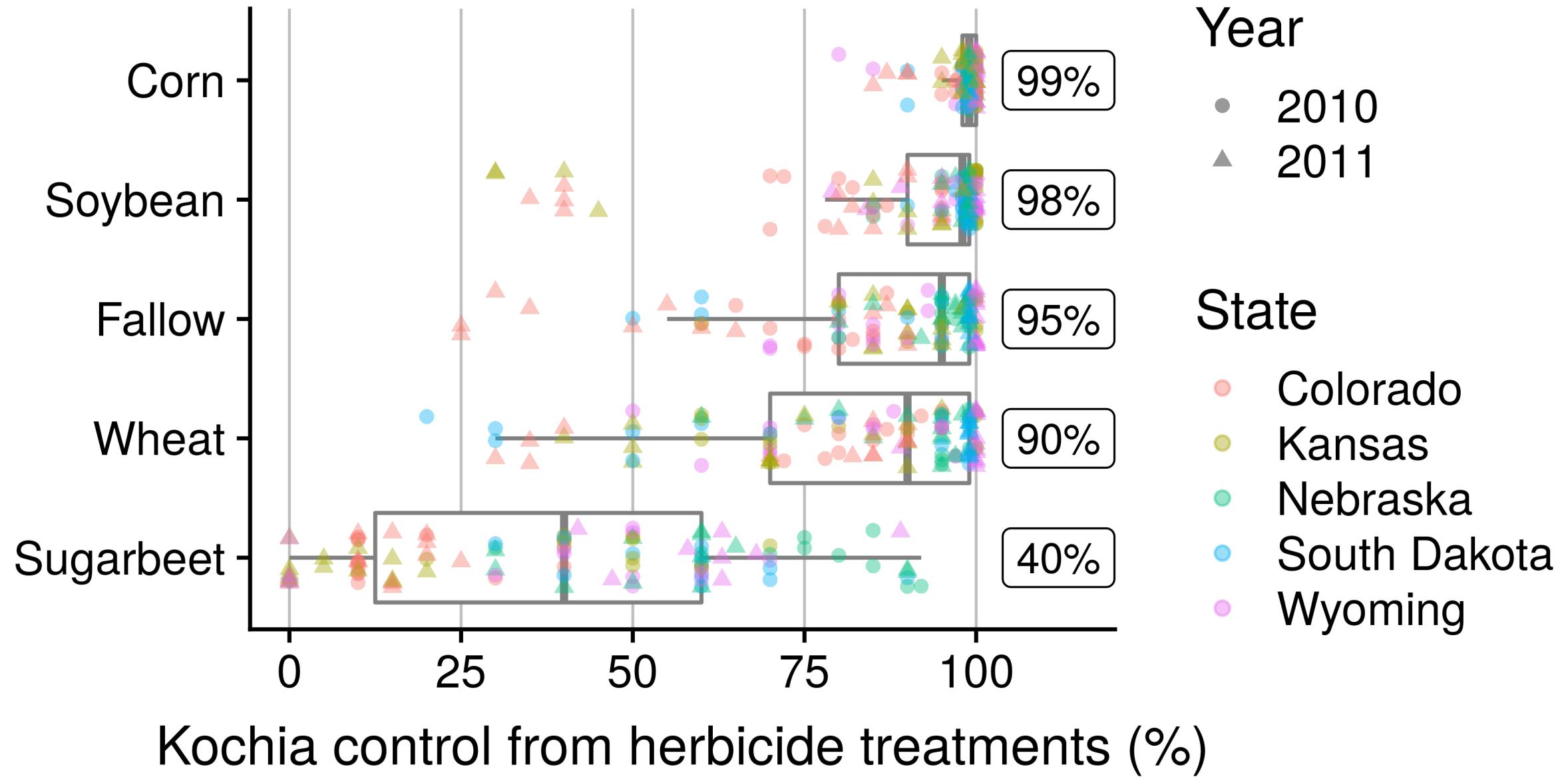
Old habits die hard...

| Herbicide | Kochia control (%) |
|-------------------------|--------------------|
| Betamix 24 fl oz + HSOC | |
| Betamix 48 fl oz + HSOC | |
| Betamix 96 fl oz + HSOC | |

Old habits die hard...

| Herbicide | Kochia control (%) |
|-------------------------|--------------------|
| Betamix 24 fl oz + HSOC | 5 |
| Betamix 48 fl oz + HSOC | 12 |
| Betamix 96 fl oz + HSOC | 10 |

... same for kochia



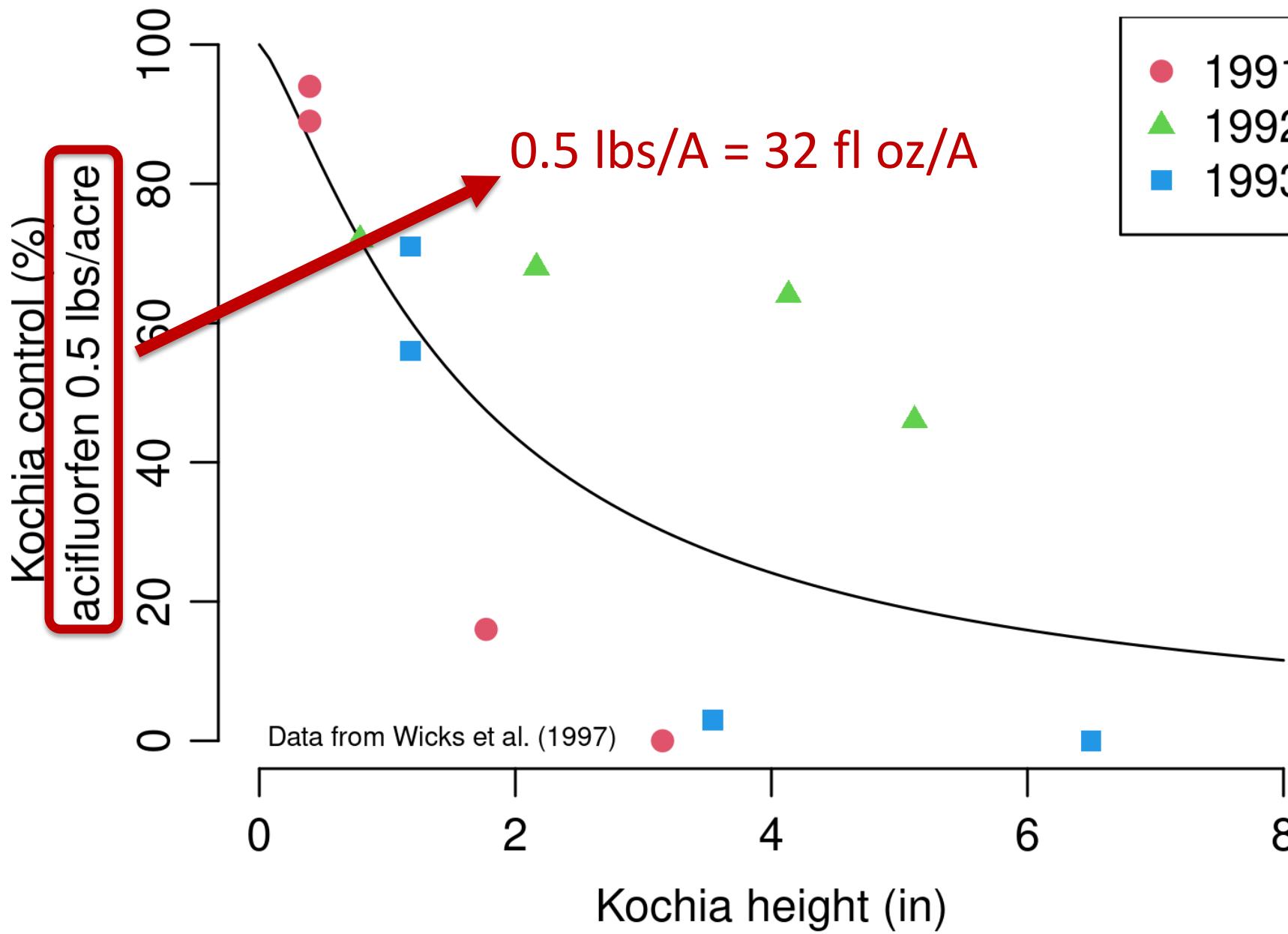
Pre-plant Burndown

~~Command:~~

- 2013: Looked very promising
- 2014: Looked ok, question about safety
- 2015: Killed lots of beets



Lingle, WY & Scottsbluff, NE



Untreated control

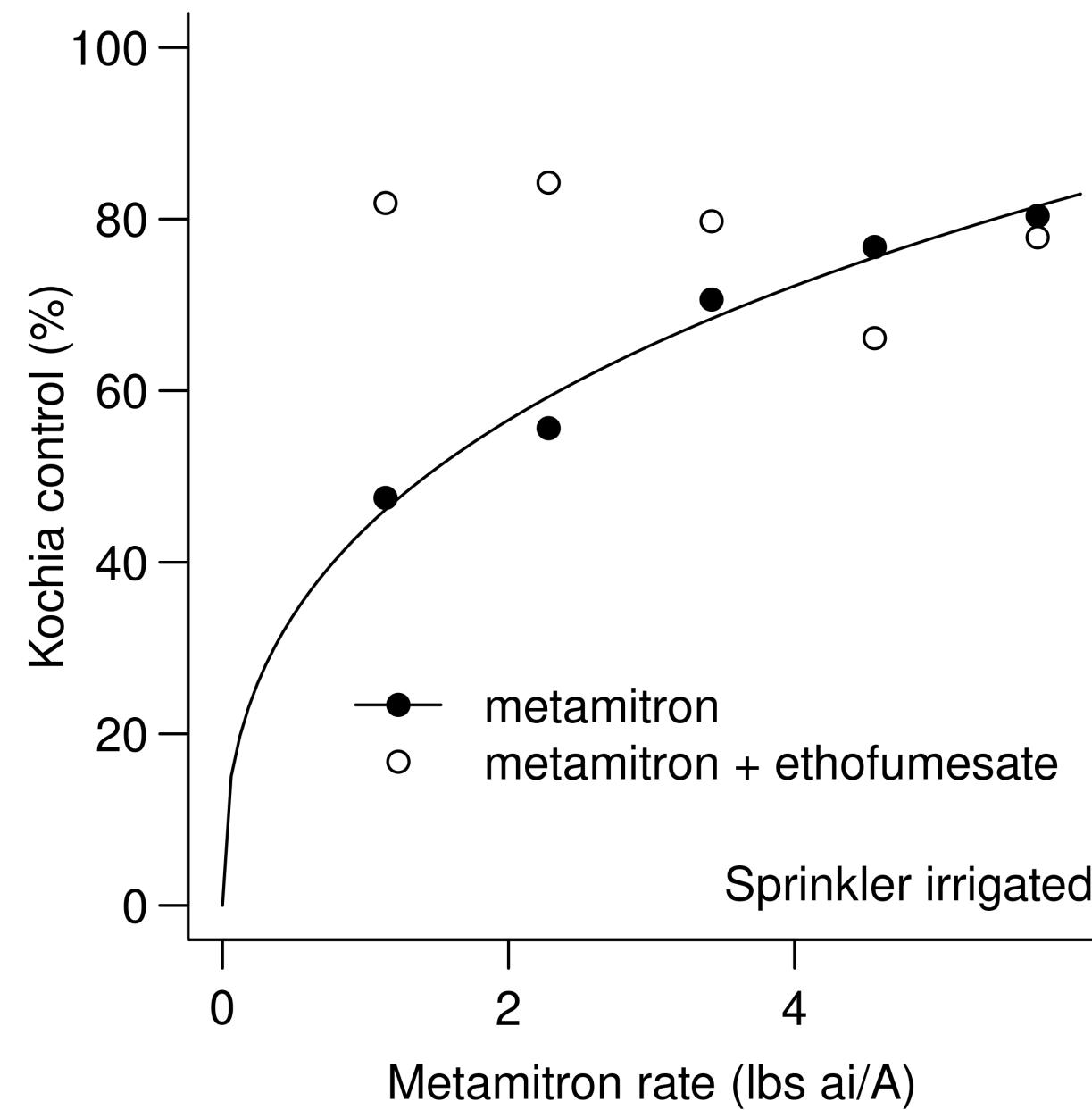
2021

Ultra Blazer 16 fl oz/A

2021



2021



2021

Kochia management in sugarbeet

↳ 50 years of kochia herbicide research summarized:

The best way to make a herbicide more effective is to mix it with a herbicide that is more effective.

Kochia management in sugarbeet

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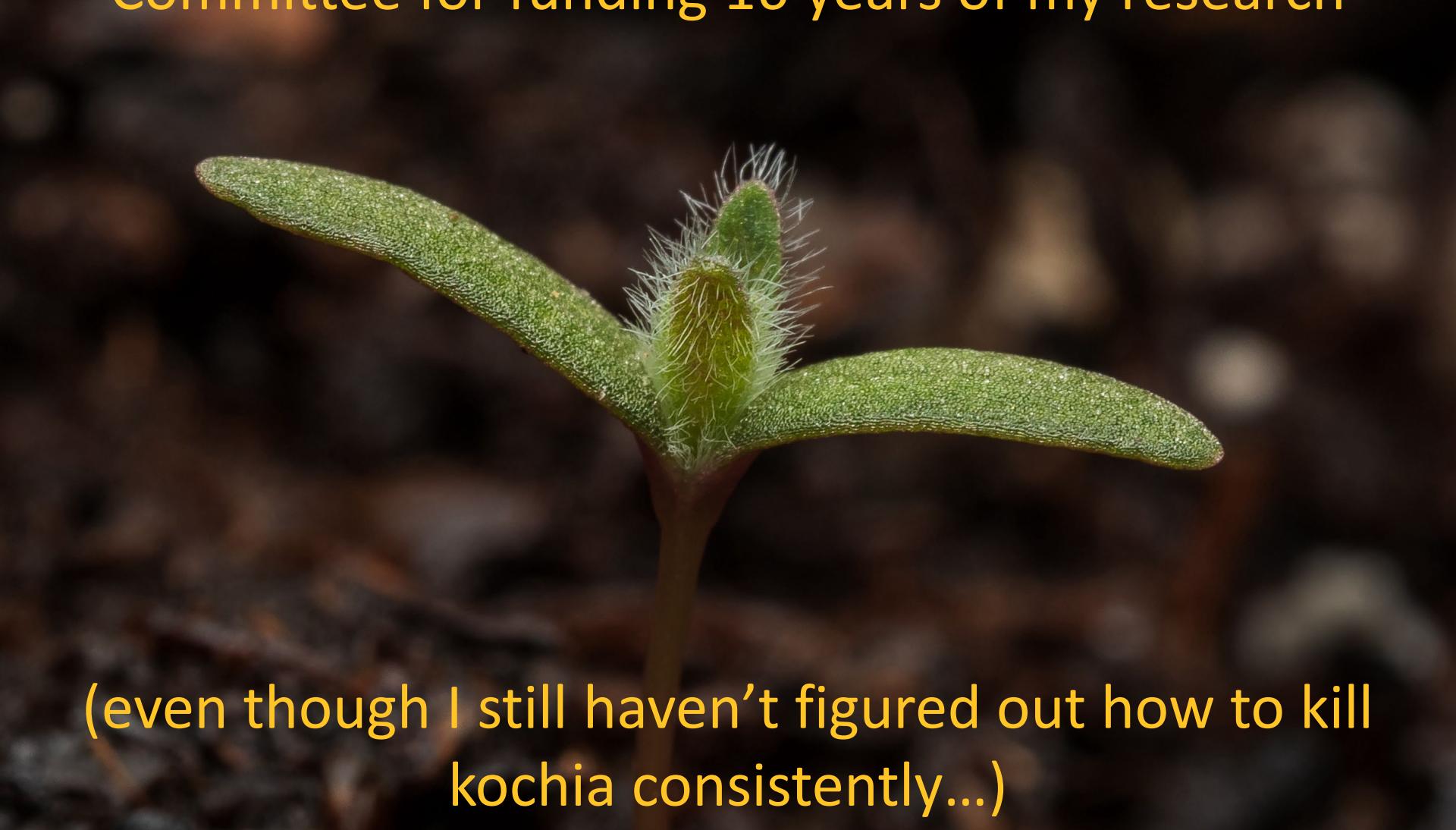
There are no highly effective POST sugarbeet herbicides for kochia.

Kochia management in sugarbeet

• 50 years of kochia control research summarized:

There are no simple answers

Thank you Western Sugar Grower-Joint Research Committee for funding 16 years of my research



(even though I still haven't figured out how to kill kochia consistently...)