

Big equipment and sprayer technology

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Equipment is not getting smaller!

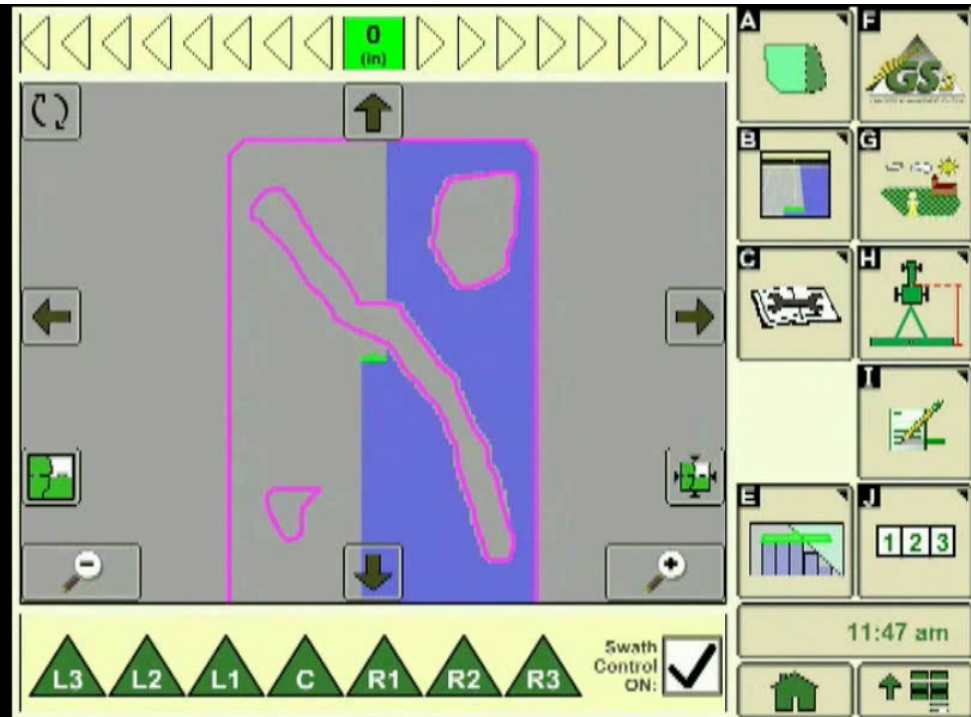


2014



Future?

Automatic Swath Control



Automatic Section Control

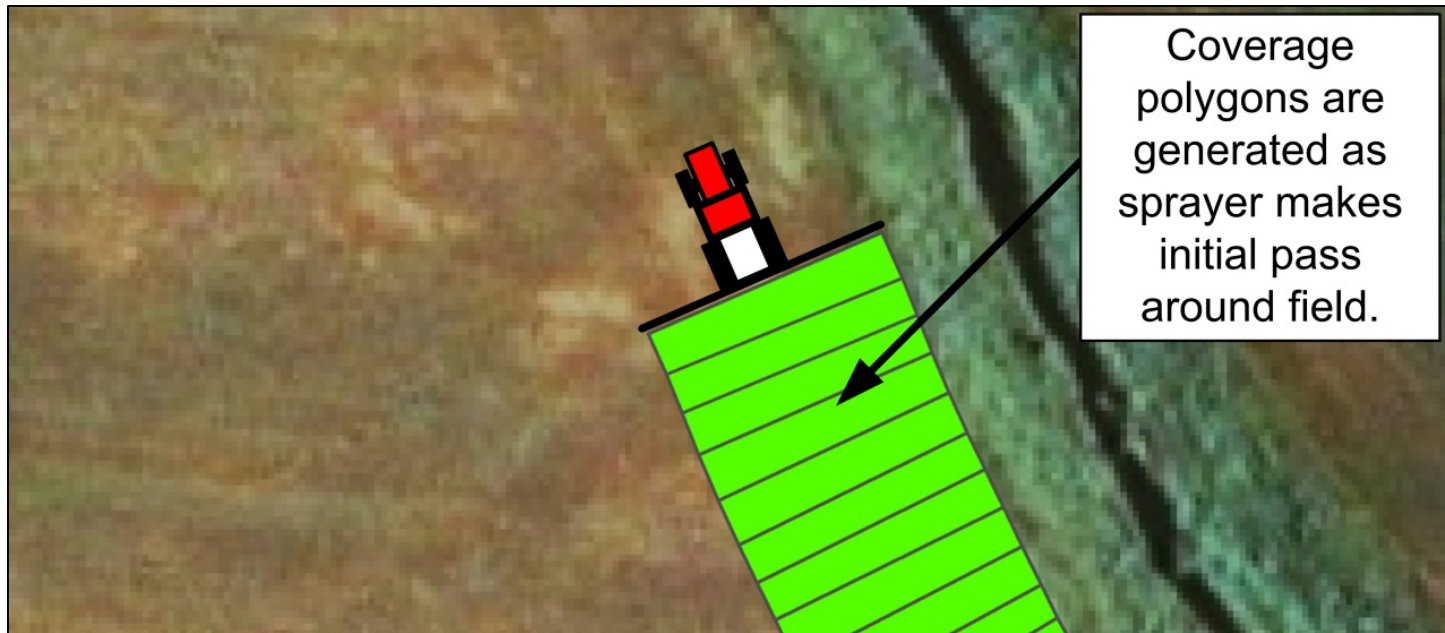
Combines GPS and Geographic Information Systems

Coverage is mapped in real-time:

- GPS coordinates

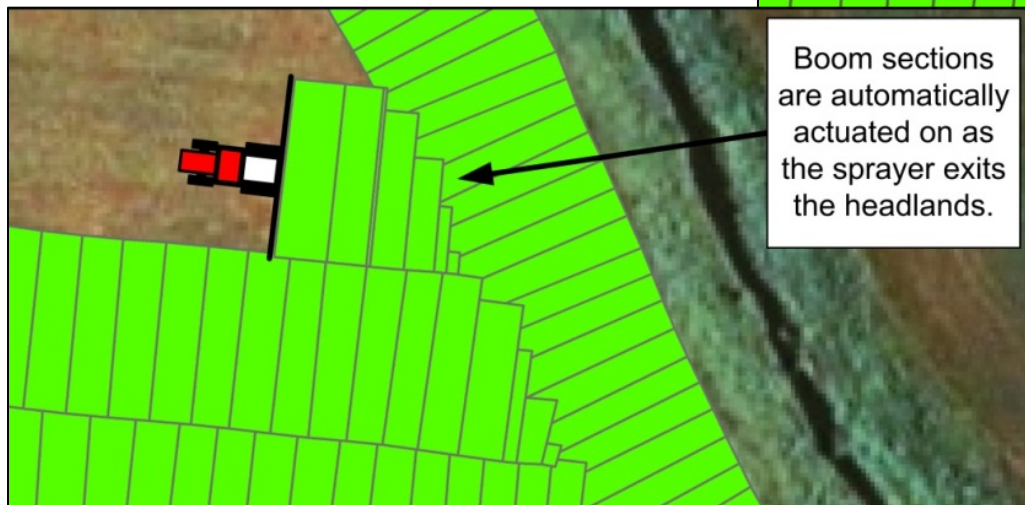
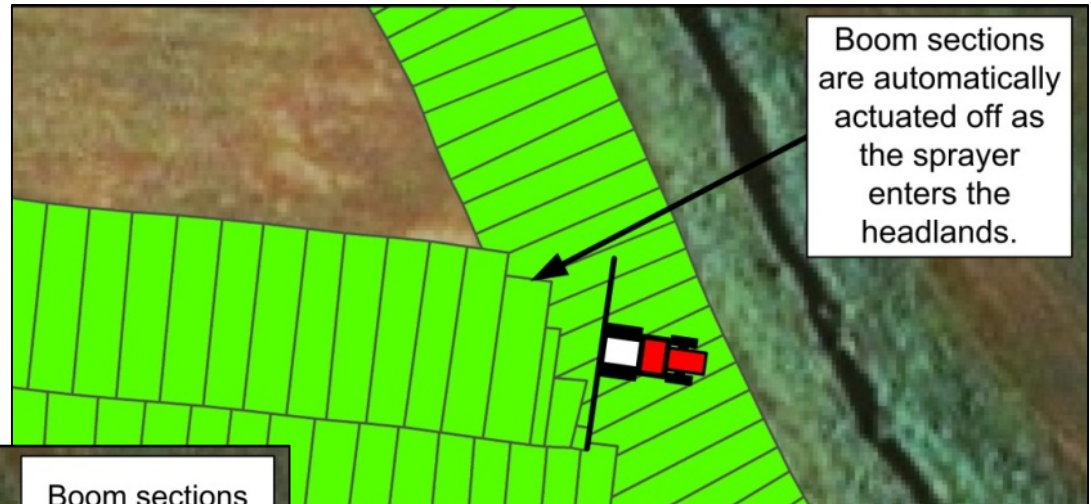
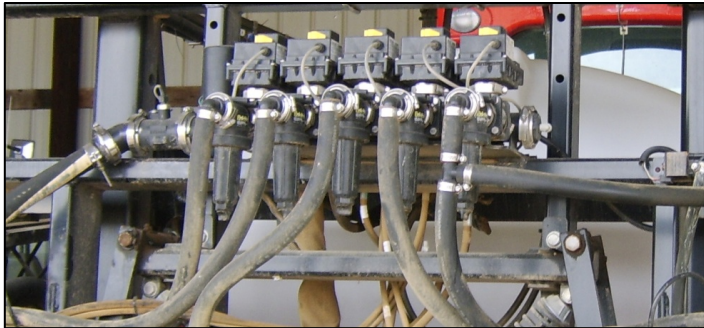
- Active Boom Sections

- Boundaries can be mapped and stored



ASC Functions

Algorithm checks for previously treated areas
Sections automatically turned off or on



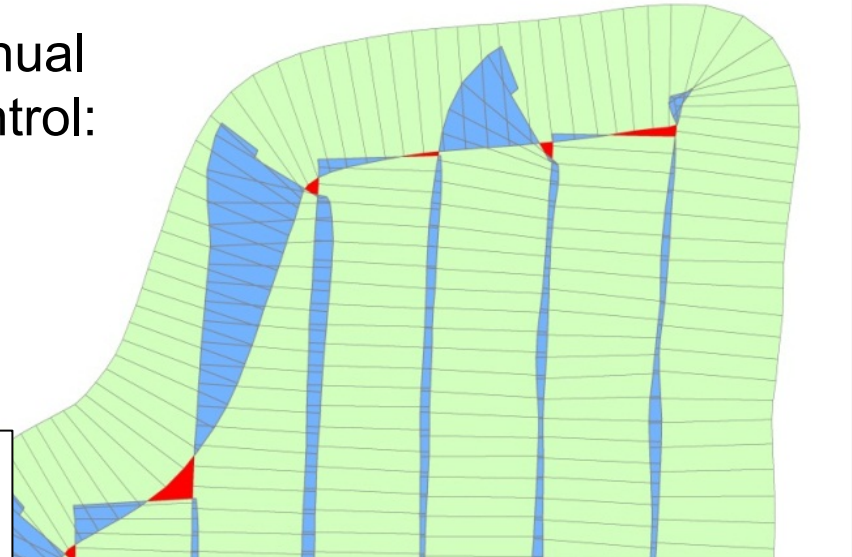
ASC Functions

Manual versus Automatic control:

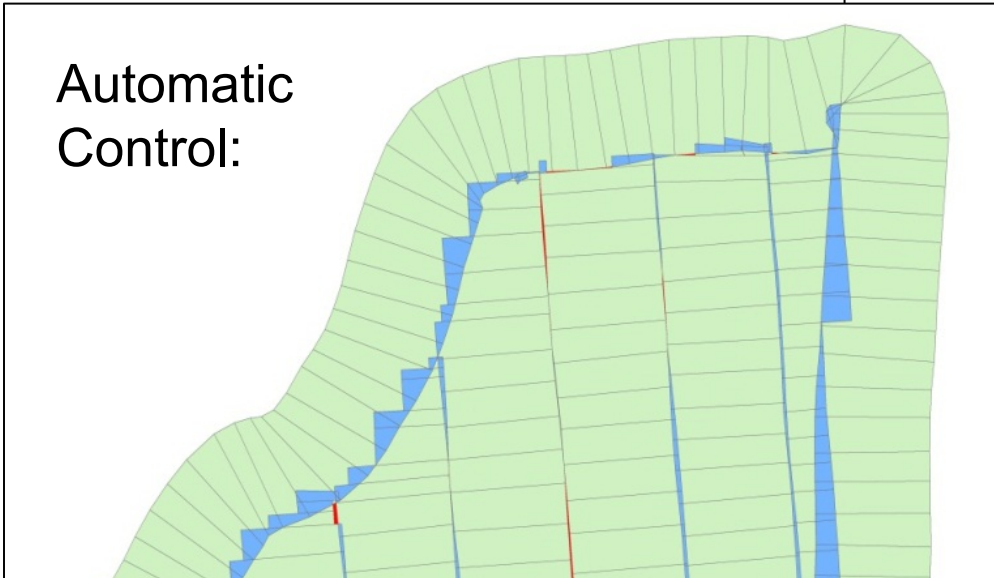
Blue = overlap

Red = skip

Manual
Control:



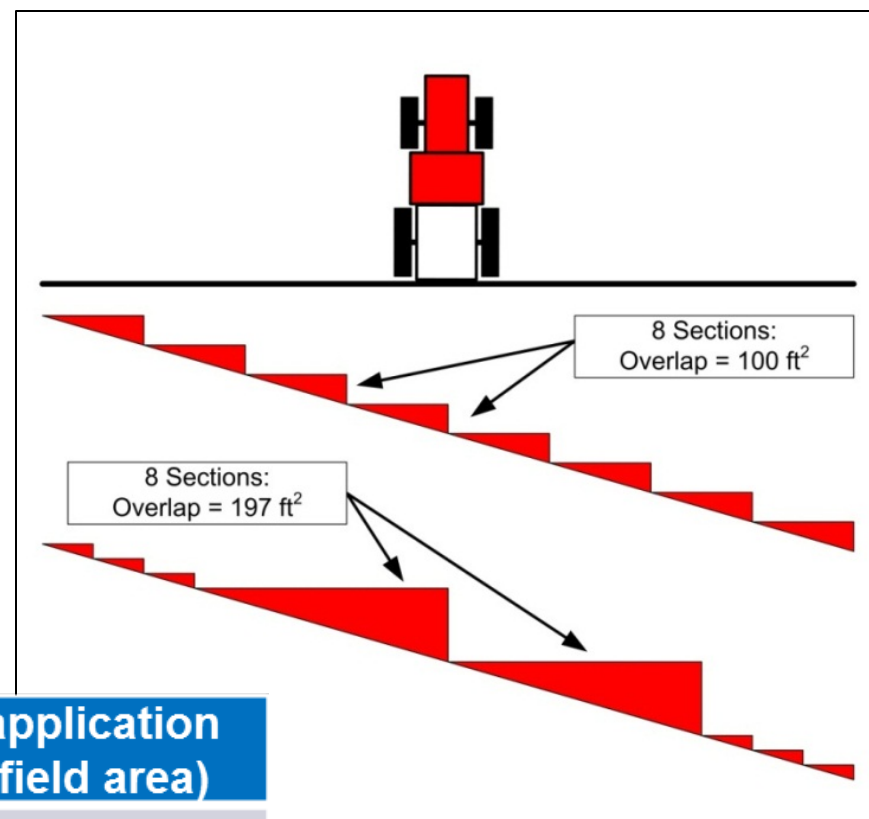
Automatic
Control:



How much can I save?

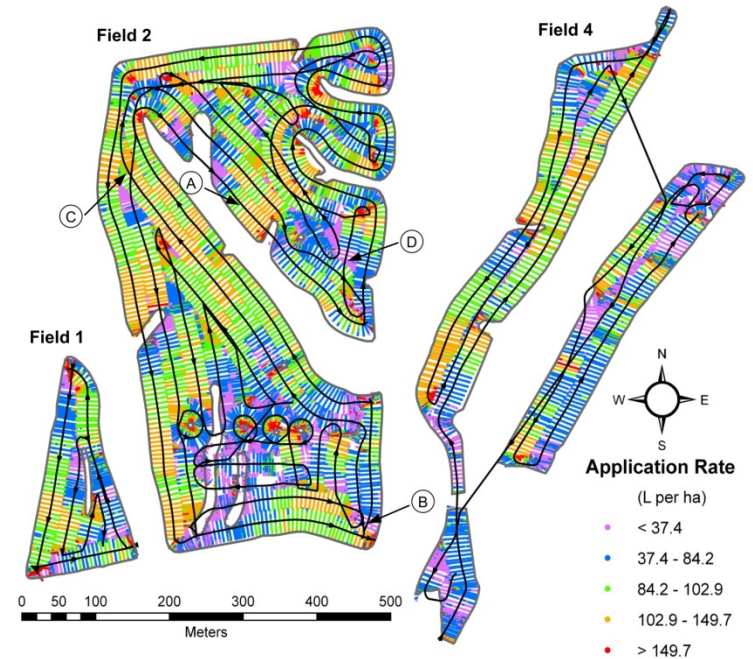
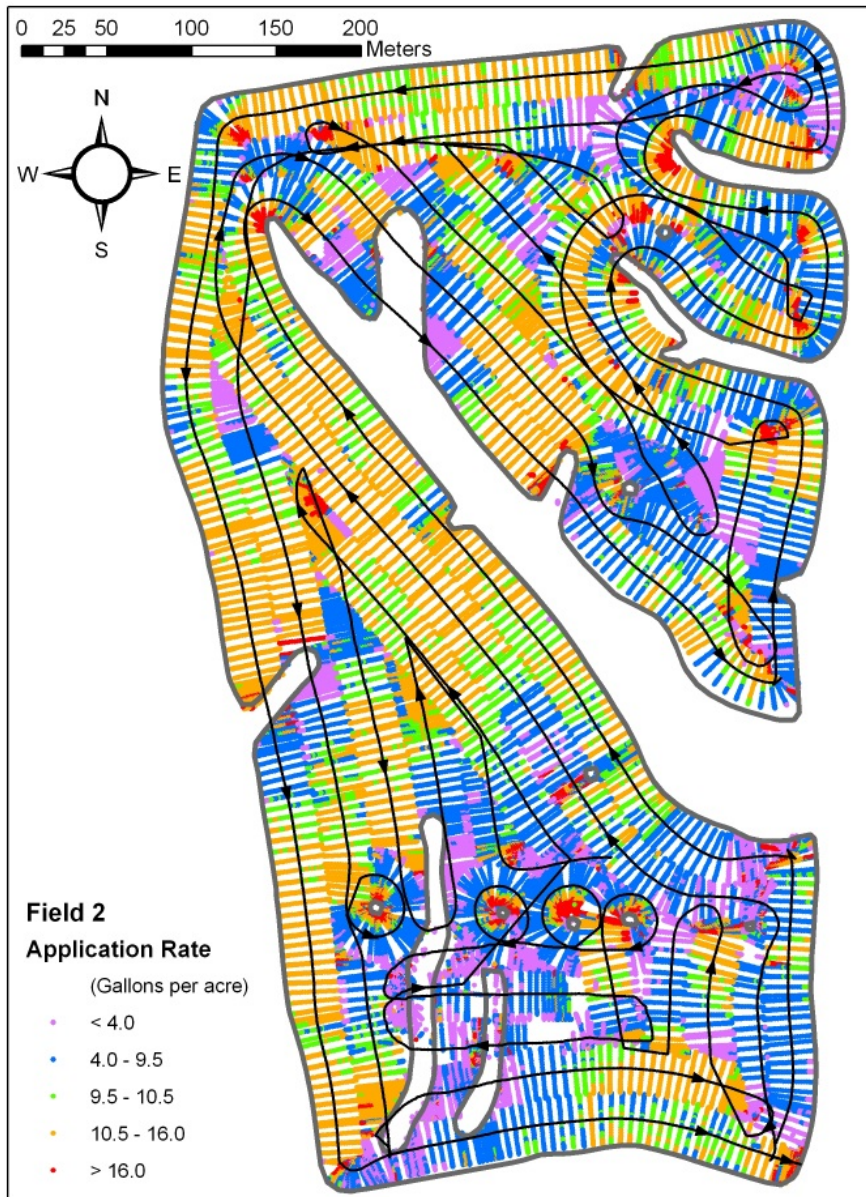
Depends on several factors:

- Number of sections
- Section widths
- Field shape/size
- On/off configuration
- % overlap setting
- Autosteer?



Sprayer control system	Boom width (ft)	Over-application (% of field area)
Manual-5 section	80	14.5
ASC-7 section	80	5.7
ASC-9 section	80	4.7
ASC-30 section	100	2.3

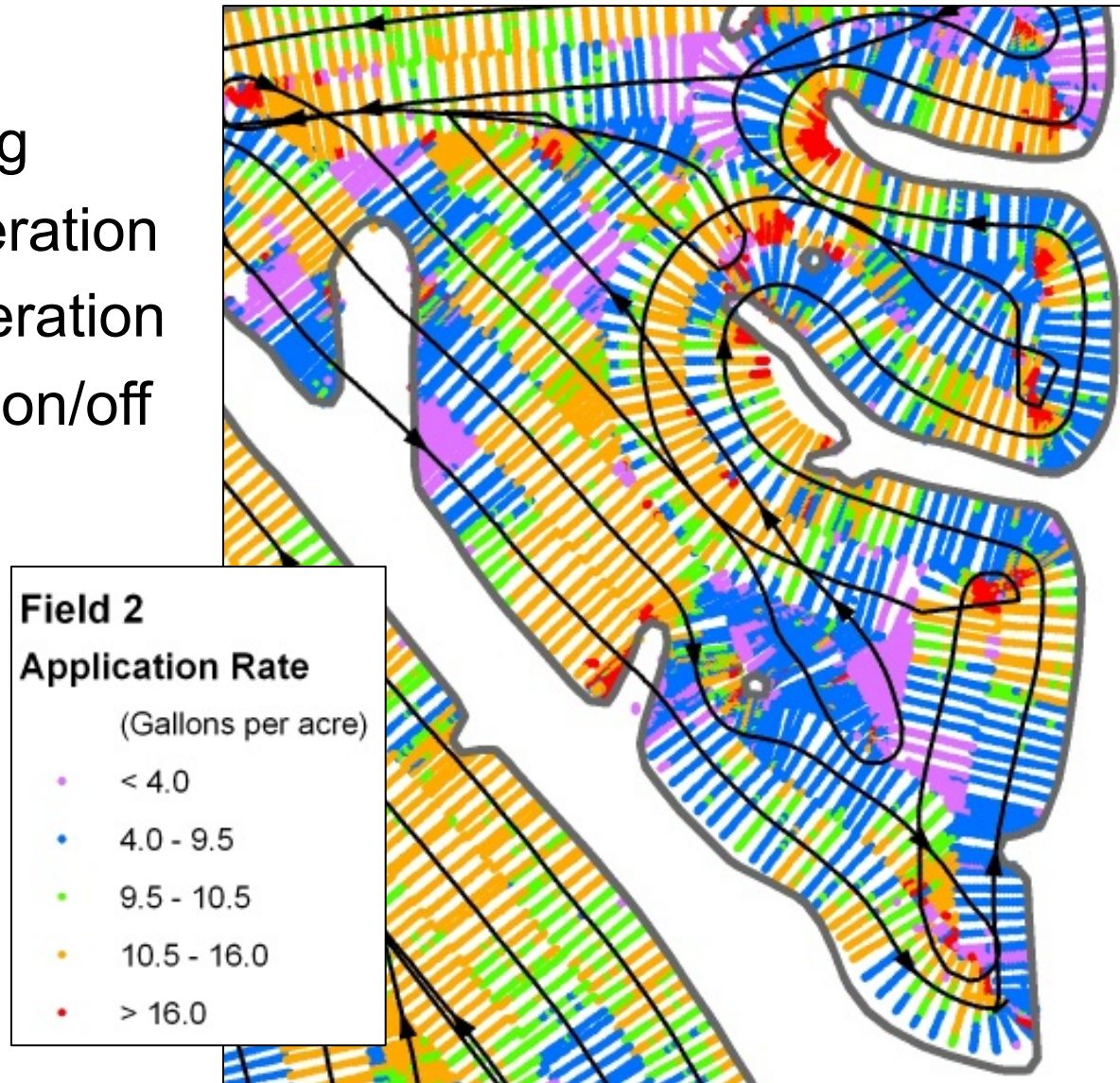
Generating Coverage Maps



Generating Coverage Maps

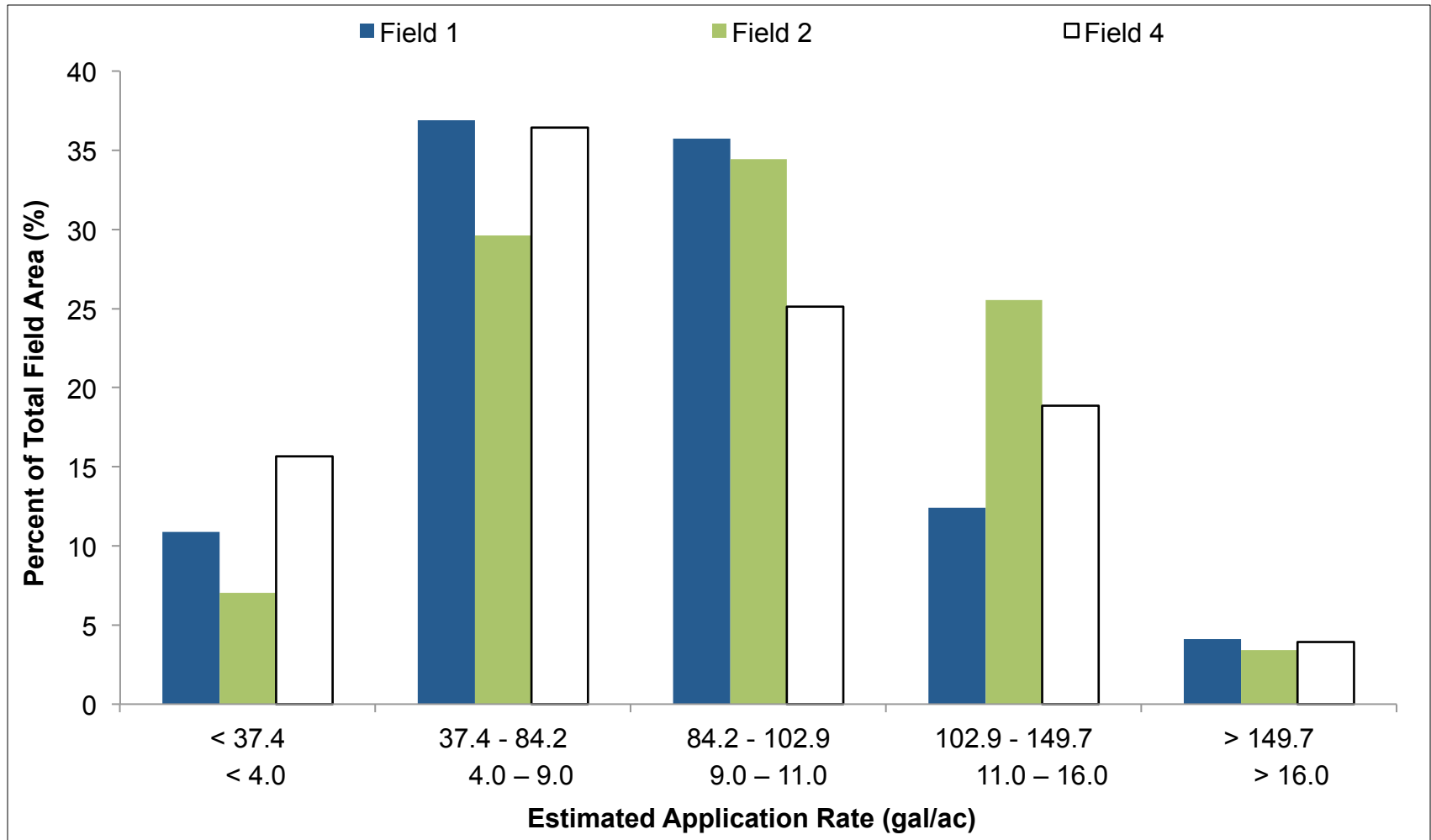
Errors:

- Turning
- Acceleration
- Deceleration
- Boom on/off



Analyzing the Data

Summarizing errors for three fields:



Field Studies

Four locations in Nebraska

Bancroft, Clay Center, Courtland, Elba

Four replications per location

Five planted species

Amaranth, Flax, Velvetleaf, Soybean, Corn

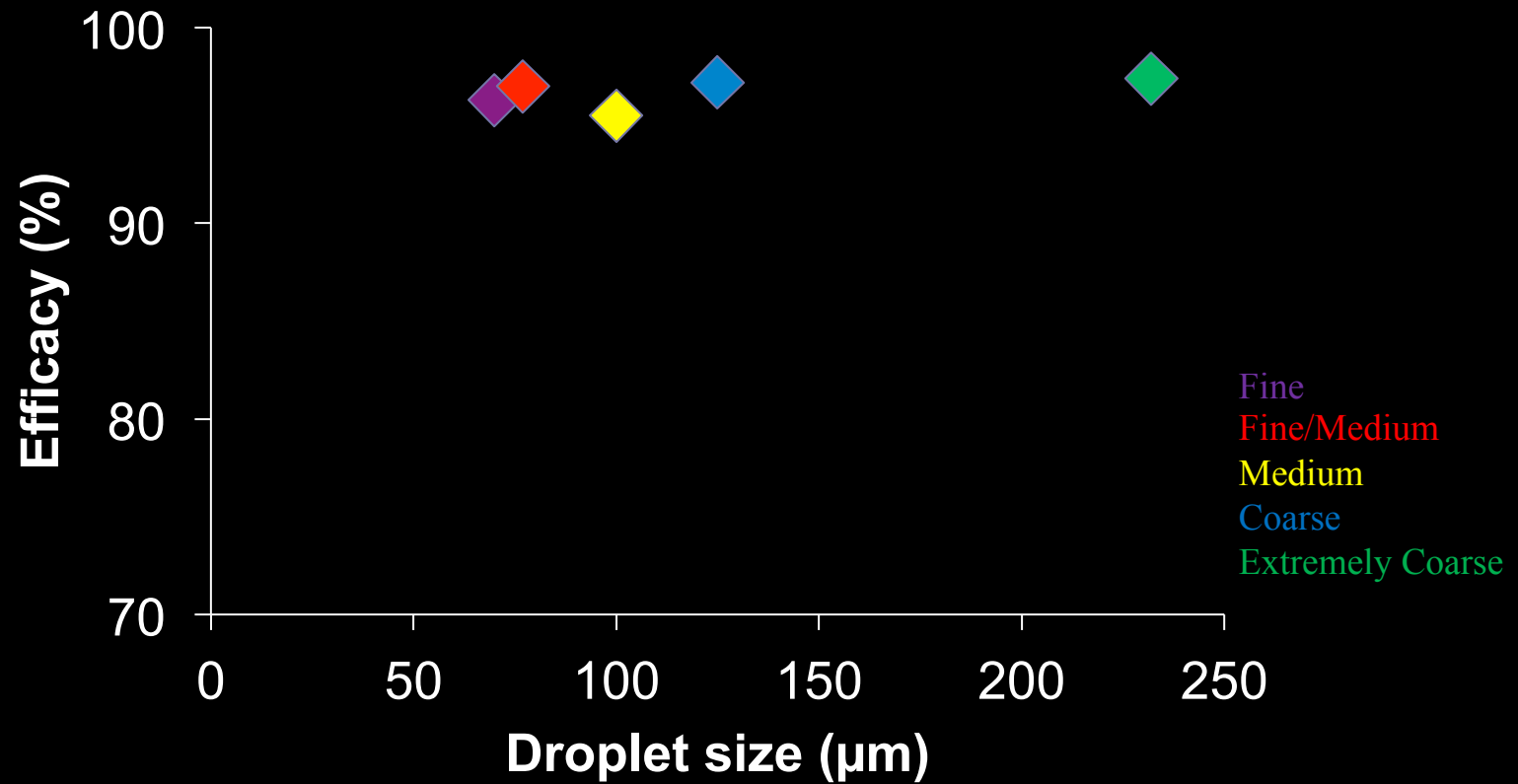
Five Nozzles plus an Untreated

XR11002 (Fine), XR11003 (Fine/Medium), TT11002 (Medium),
AIXR11002 (Coarse), AI11002 (Extremely Coarse)



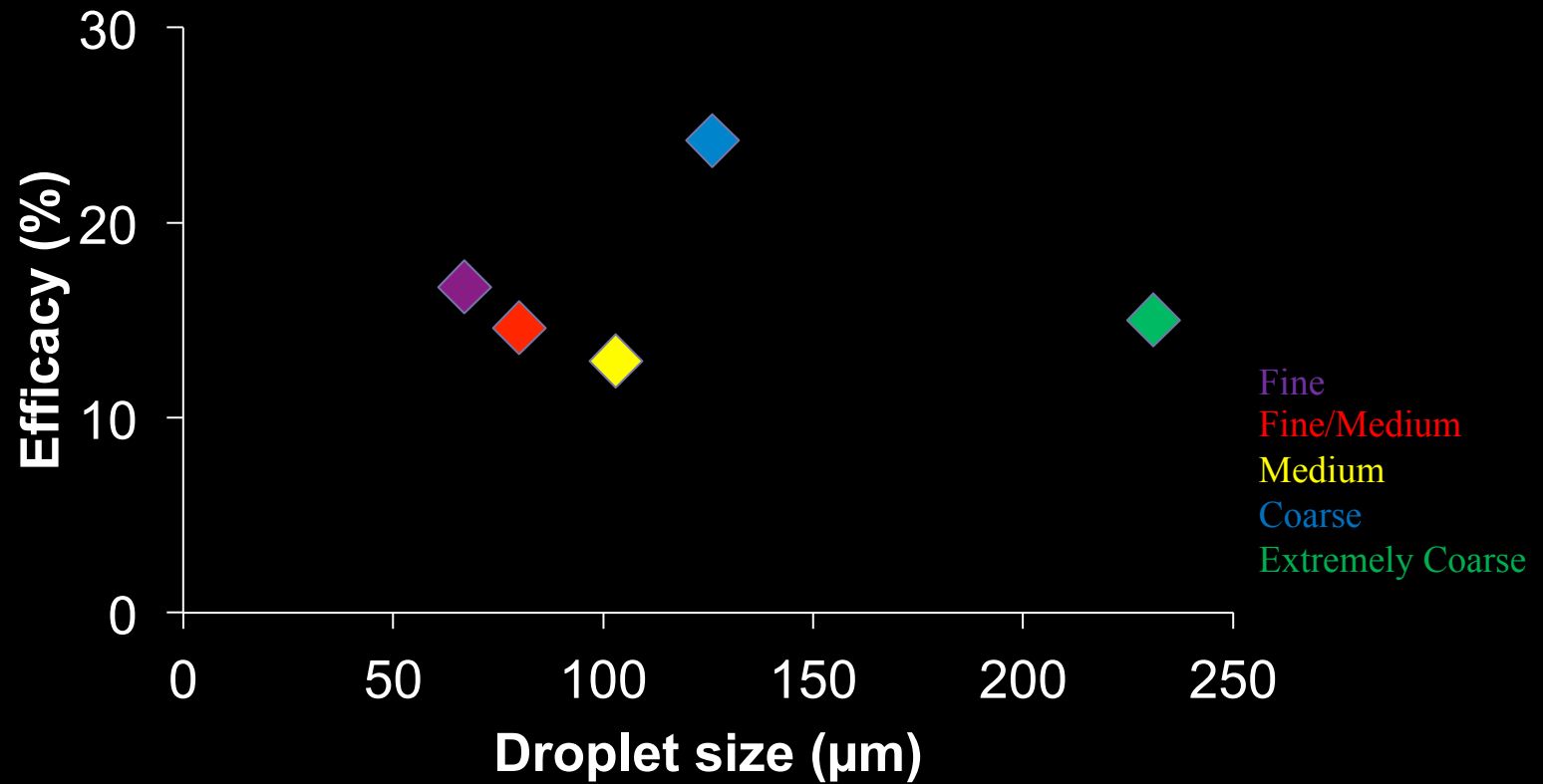
Glyphosate

Amaranth



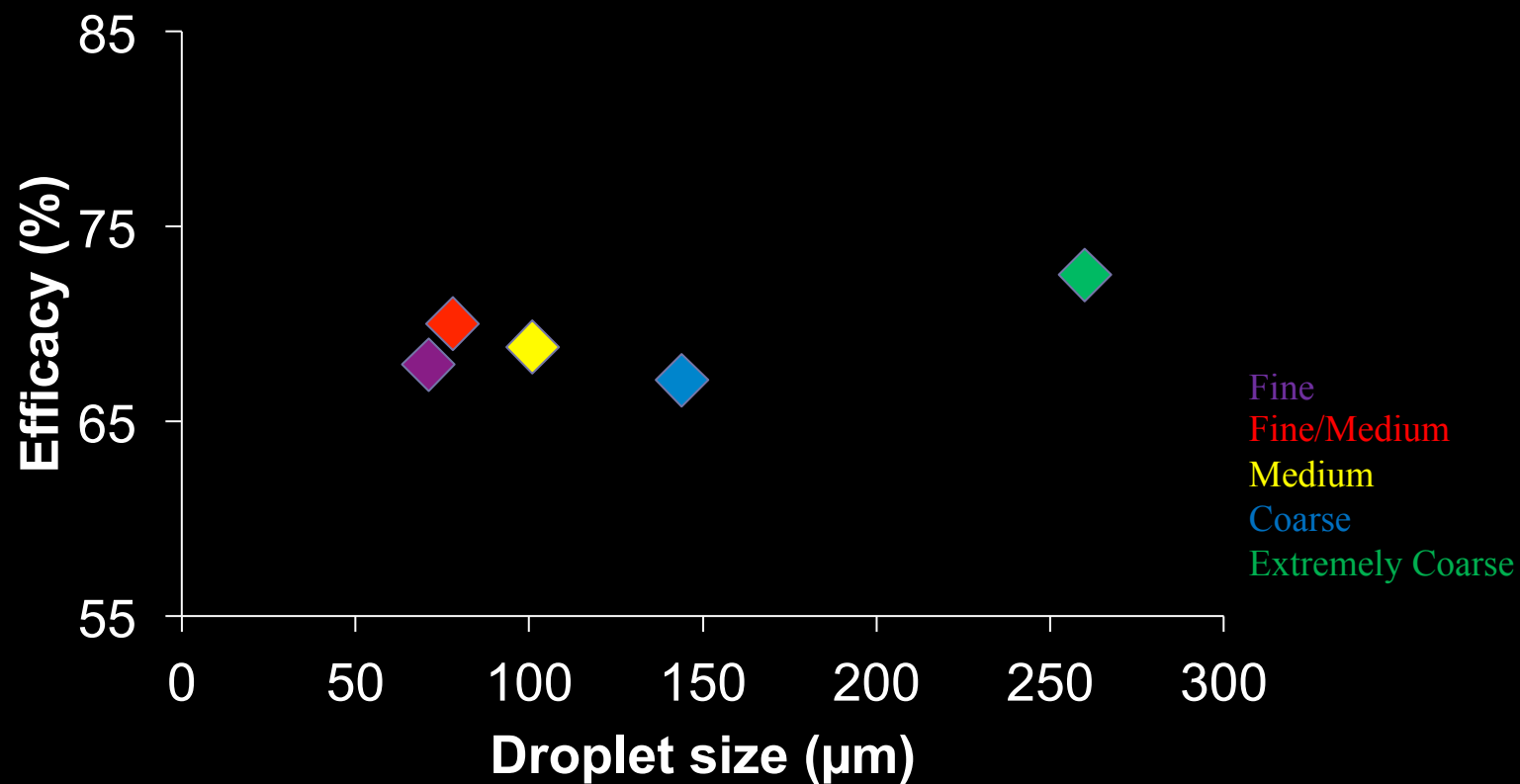
FirstRate

Amaranth



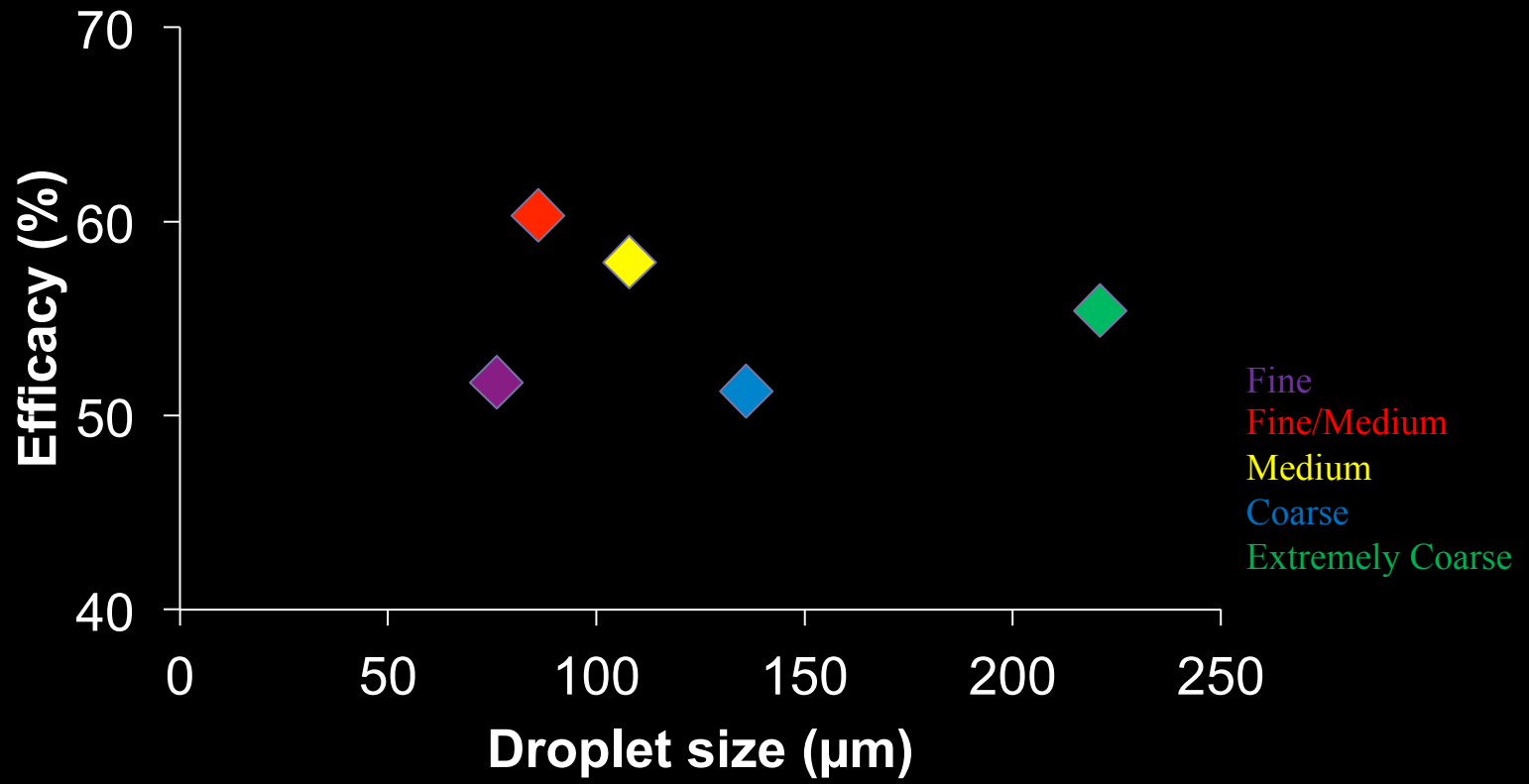
Clarity

Amaranth



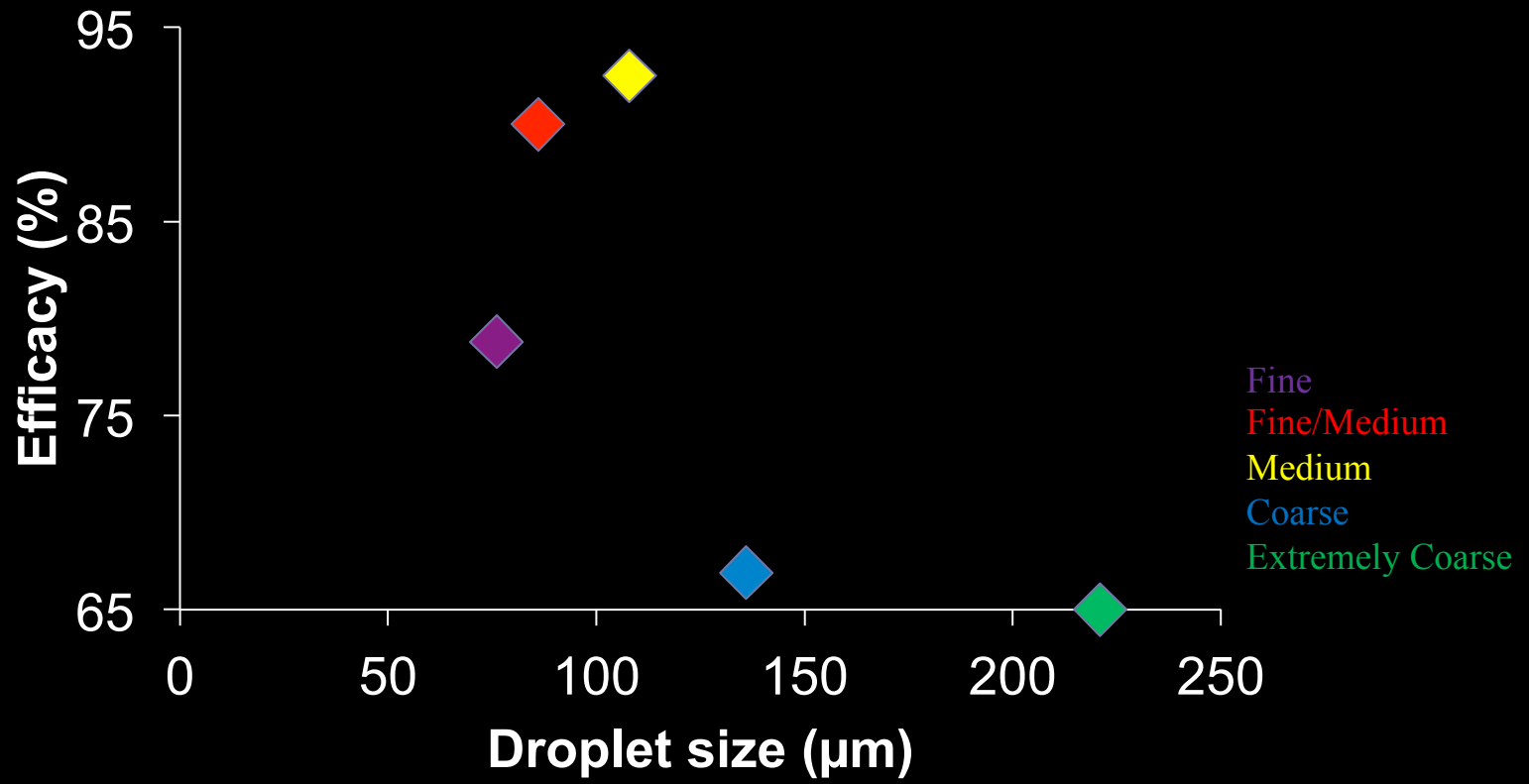
Reflex

Amaranth



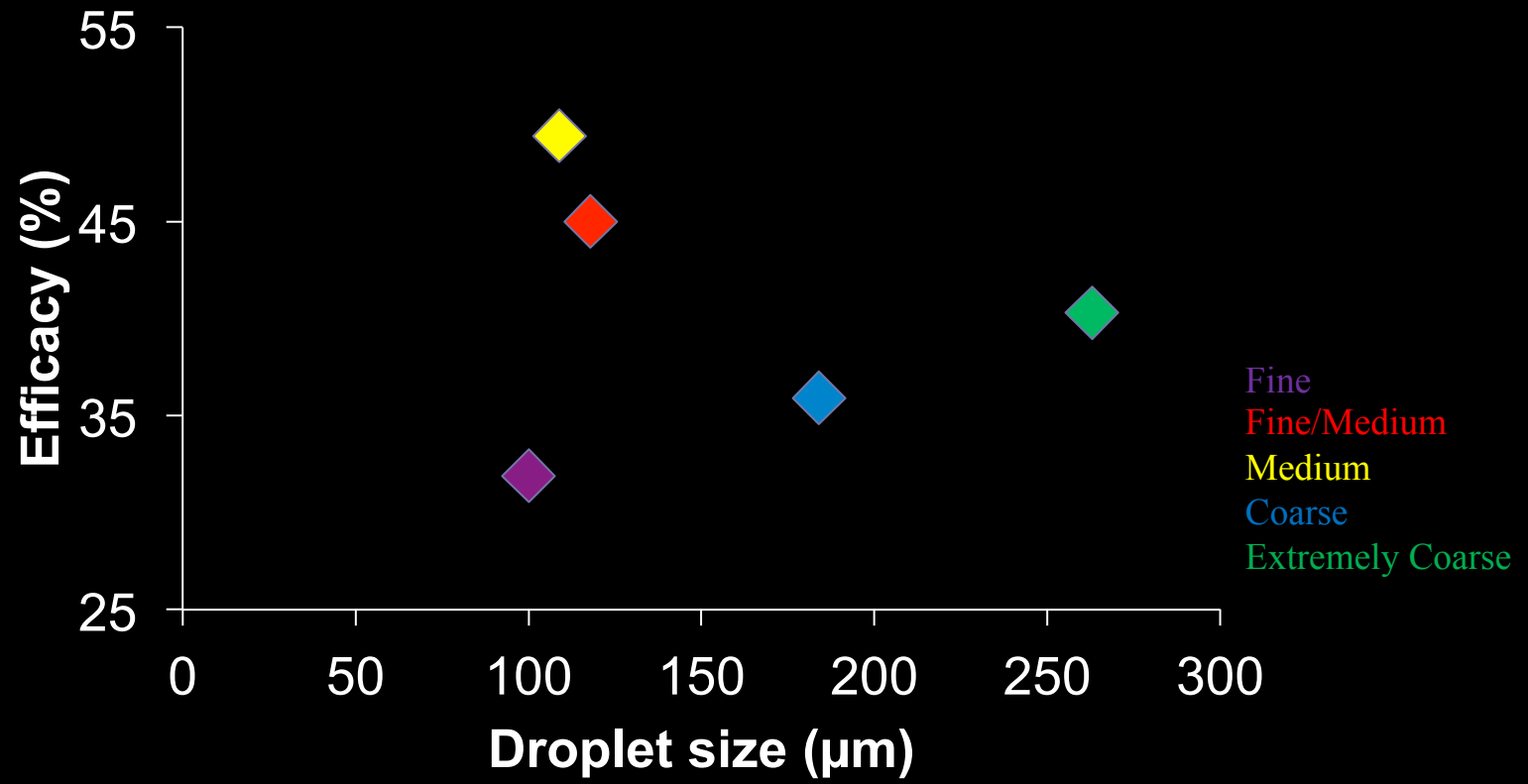
Reflex

Flax



SelectMax

Corn



Materials and Methods

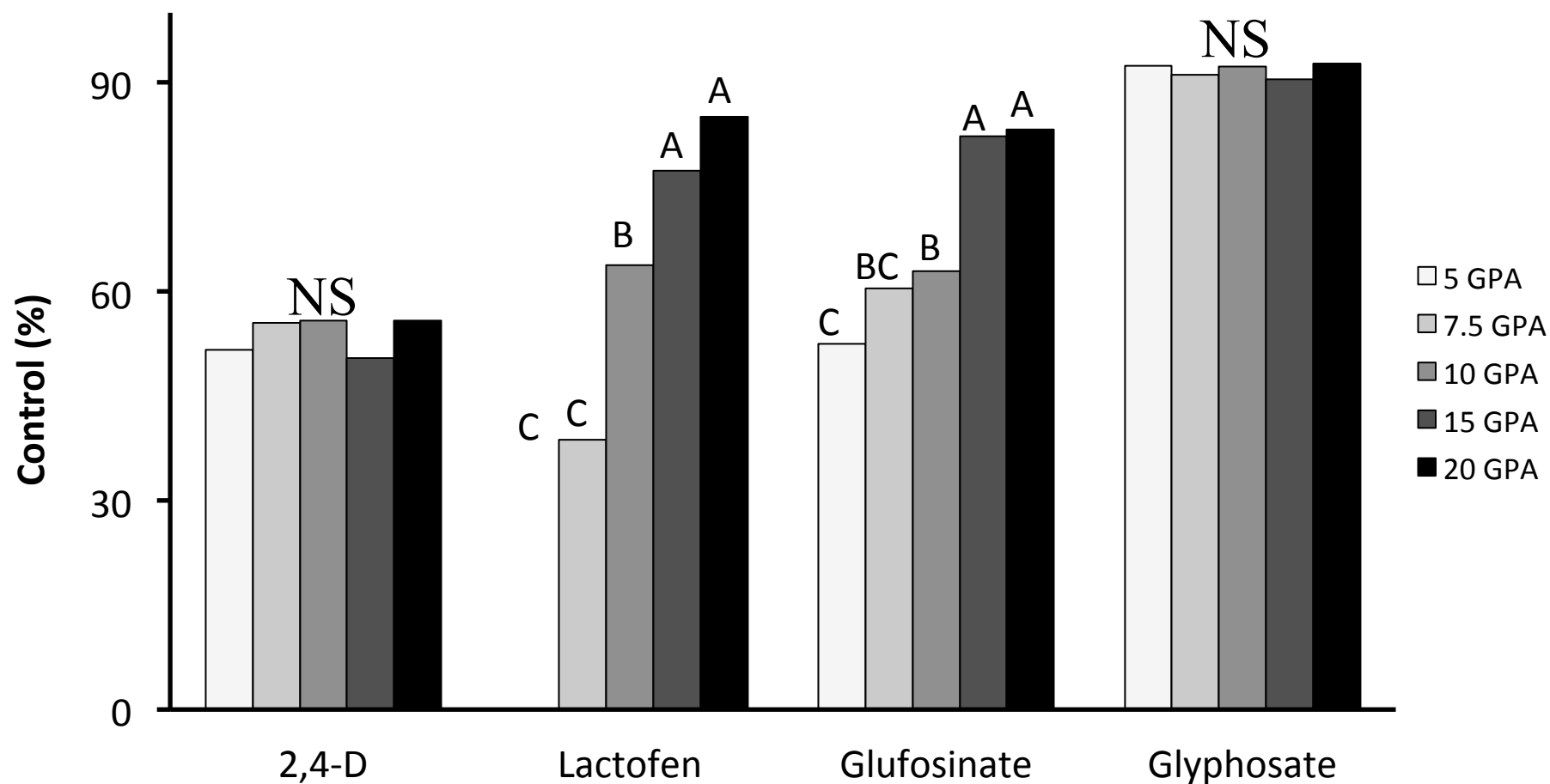
- Herbicides
 - Glyphosate (RoundUp PowerMax at 32 oz/ac) – 3 GPA
 - Glufosinate (Liberty at 22 oz/ac) – 15 GPA
 - Lactofen (Cobra at 12.5 oz/ac) – 20 GPA
 - 2,4-D (Weedone at 32 oz/ac) – 10 GPA
- Plots
 - 5 ft x 10 ft
- Weed Control Ratings taken 14 and 28 DAT

Materials and Methods

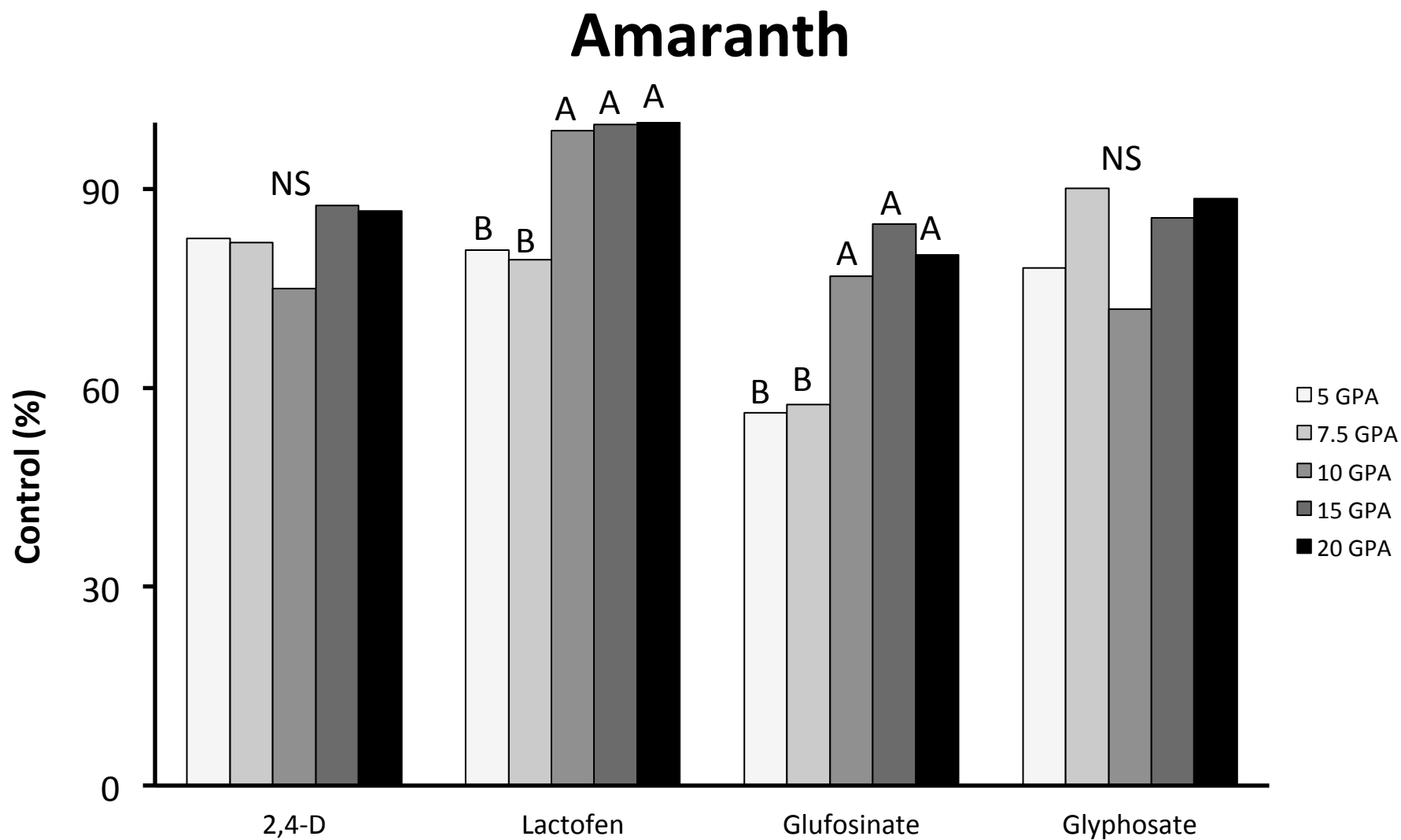
Carrier volume	Nozzle	Application speed
GPA		mph
5	XR11001	4.0
7.5	XR11001	4.0
10	XR11001	4.0
15	XR110015	4.0
20	XR11002	4.8

Results

Velvetleaf



Results



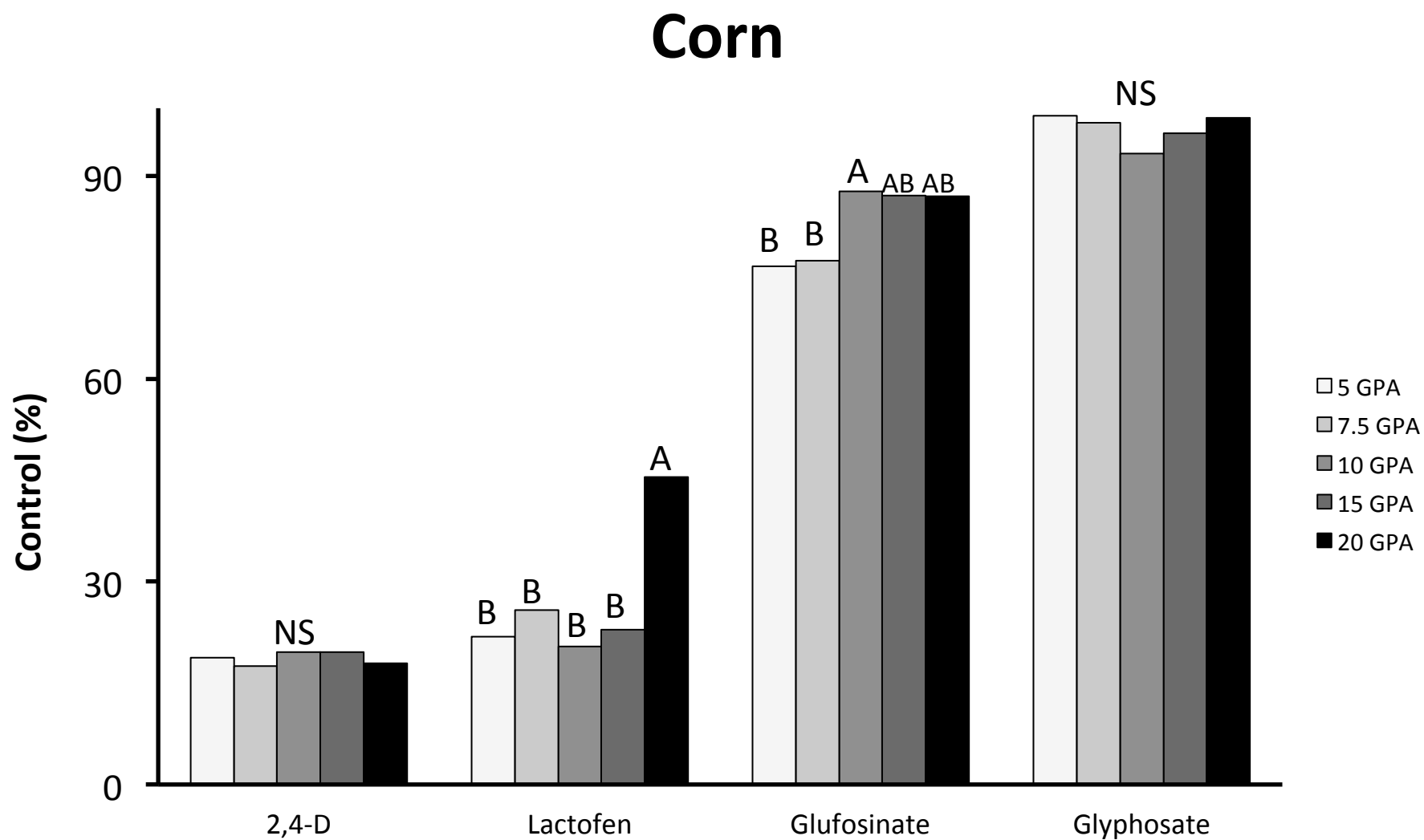
Lactofen 5 GPA

5 GPA
12.5 oz/ac Cobra
8.5 lbs/100 Gal AMS
1% v/v COC

Lactofen 10 GPA

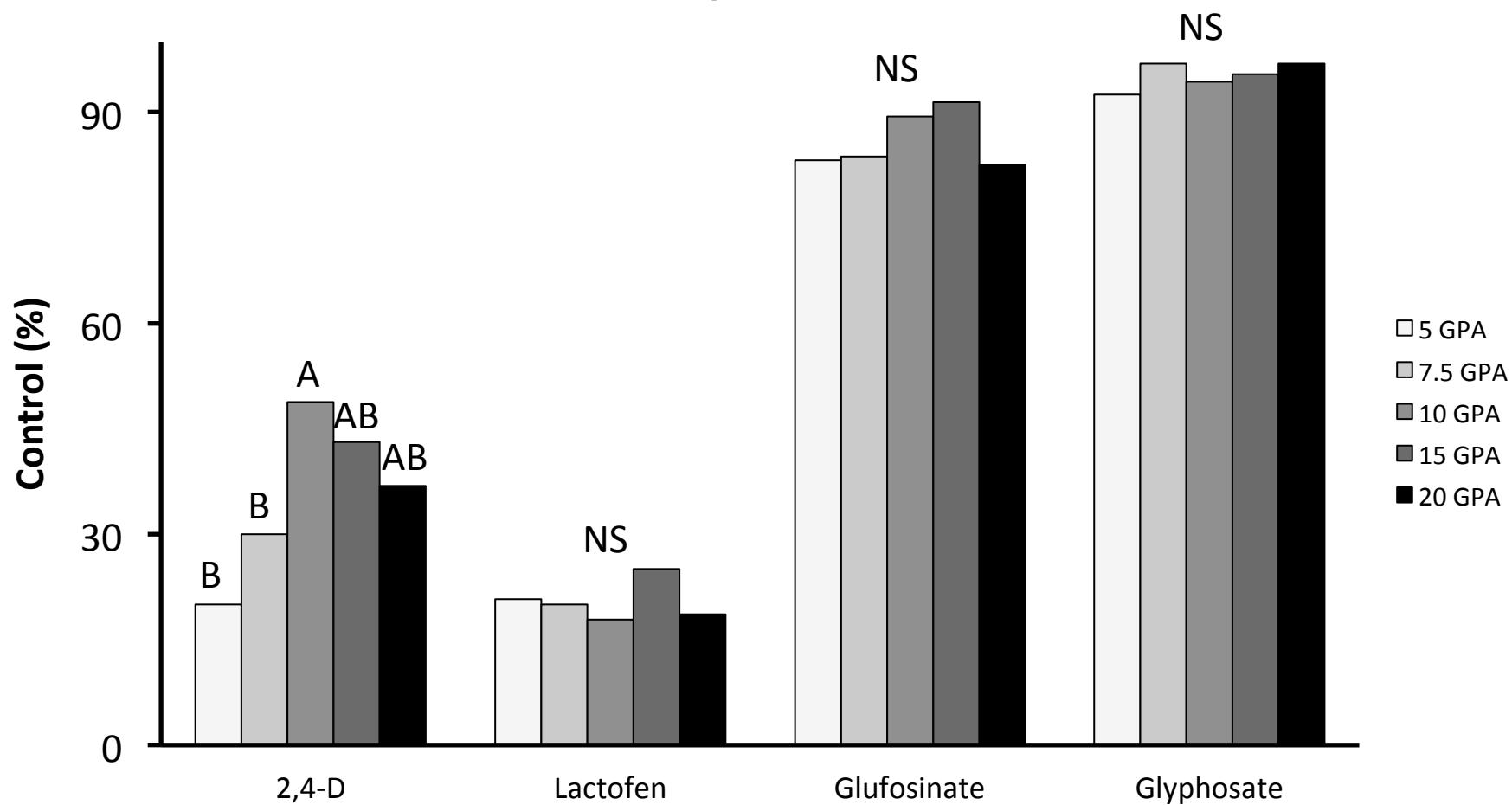
10 GPA
12.5 oz/ac Cobra
8.5 lbs/100 Gal AMS
1% v/v COC

Results

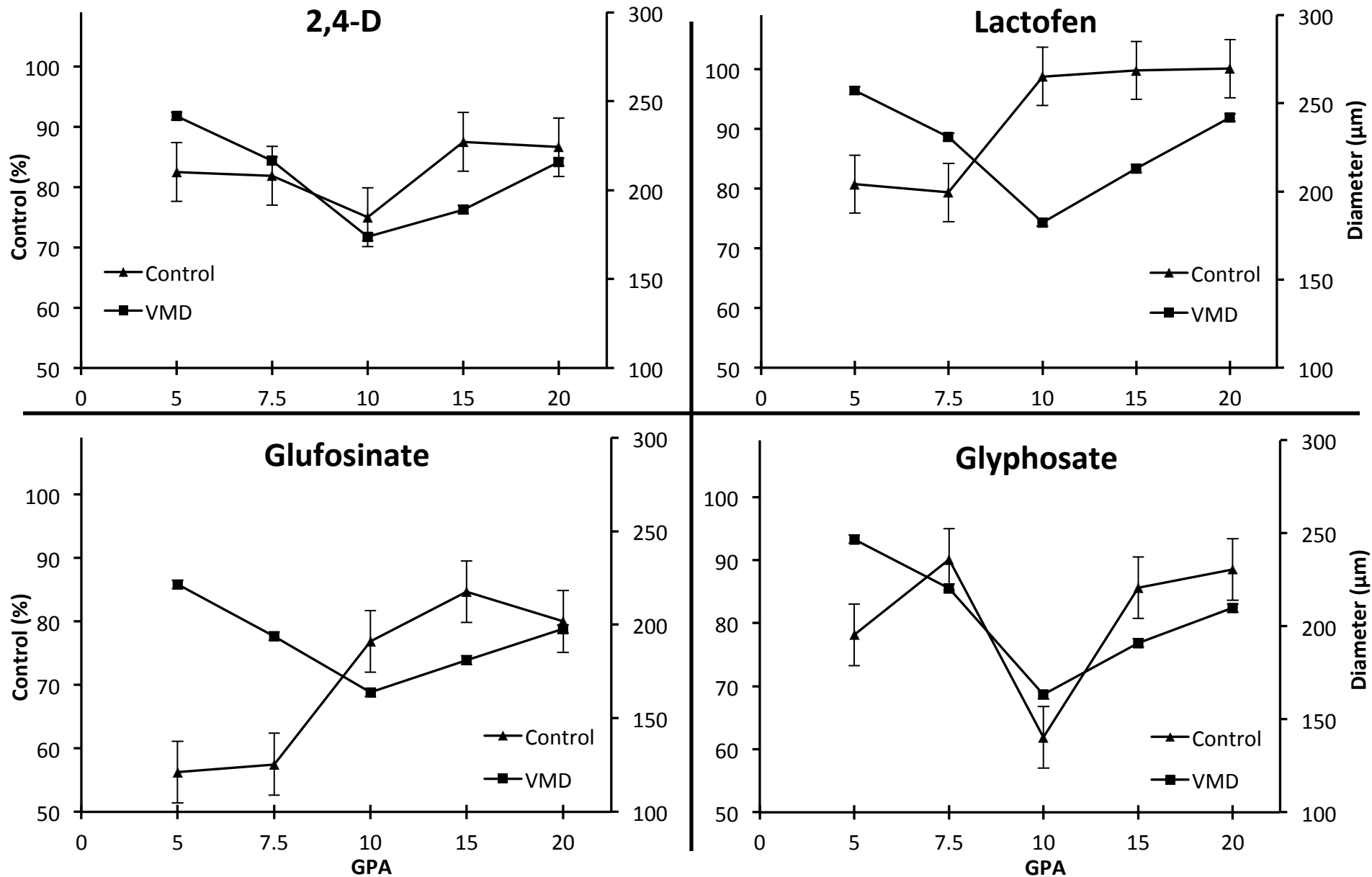


Results

Soybean



Results - Amaranth



UNL Ground Spray App



Take Home Messages!

Particle drift can be influenced by formulation

Nozzle selection has the greatest influence on particle size

Adjuvants can reduce drift potential, but must be tested

There is no substitute for common sense – if the wind is blowing droplets will move

Pay attention to sensitive vegetation in surrounding areas

Drift **WILL** happen! Mitigating drift is essential!

Questions?

