


Improving management of white mold in soybeans: Fungicide Efficacy | Drop Nozzles

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Drop nozzles - methods

- **'360' Undercover drop nozzles** (360 Yield Center)
- **Constant driving speed** (3.8 mph), **spray volume** (15 gal/ac)
- **Drop nozzles centered between 21-inch rows**

Applications were made with a tractor-mounted boom equipped with a pulse-width modulation system (Capstan AG). Pulse width was calibrated and confirmed by measuring nozzle output. Spraying Systems TeeJet spray nozzles were used.

Sclerotinia management in soybeans – field trials conducted in Carrington and Oakes, ND (2018)

Impact of application method and application frequency on fungicide efficacy

Soybean row spacing:
21 inches

Carrington, ND (2018)

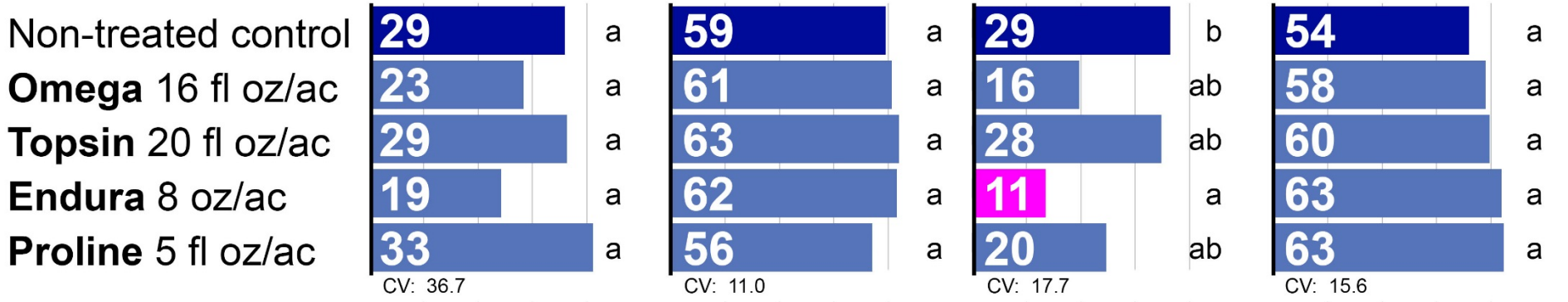
Peterson Farms '17X09N' (0.9 maturity)

Oakes, ND (2018)

Pioneer 'P11A95X' (1.1 maturity)

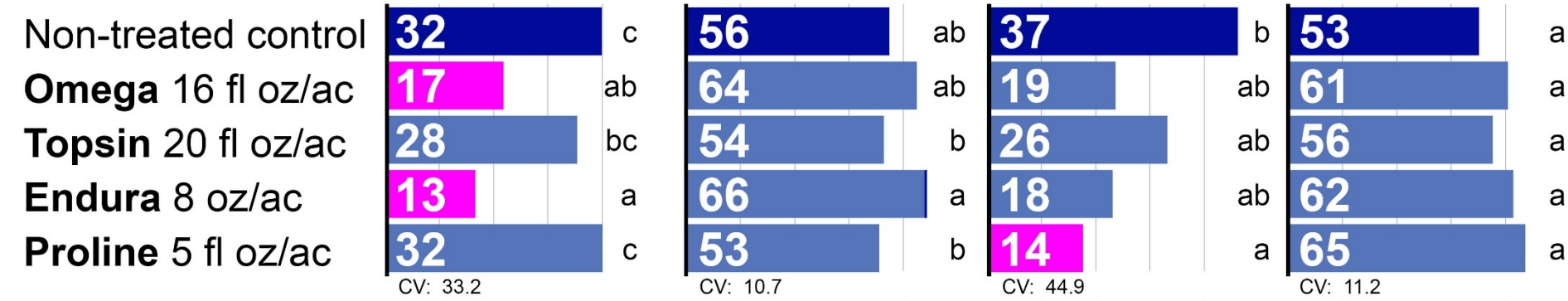
BOOM-MOUNTED NOZZLES: **One fungicide application** (R2 growth stage)

XR8006 flat-fan nozzles, 40 psi (medium droplets) spray volume = 15 gal/ac driving speed = 6.7 mph



BOOM-MOUNTED NOZZLES: **Two fungicide applications** (R2 + R3 growth stages)

XR8006 flat-fan nozzles, 40 psi (medium droplets) spray vol. = 15 gal/ac driving speed = 6.7 mph applications 11 days apart



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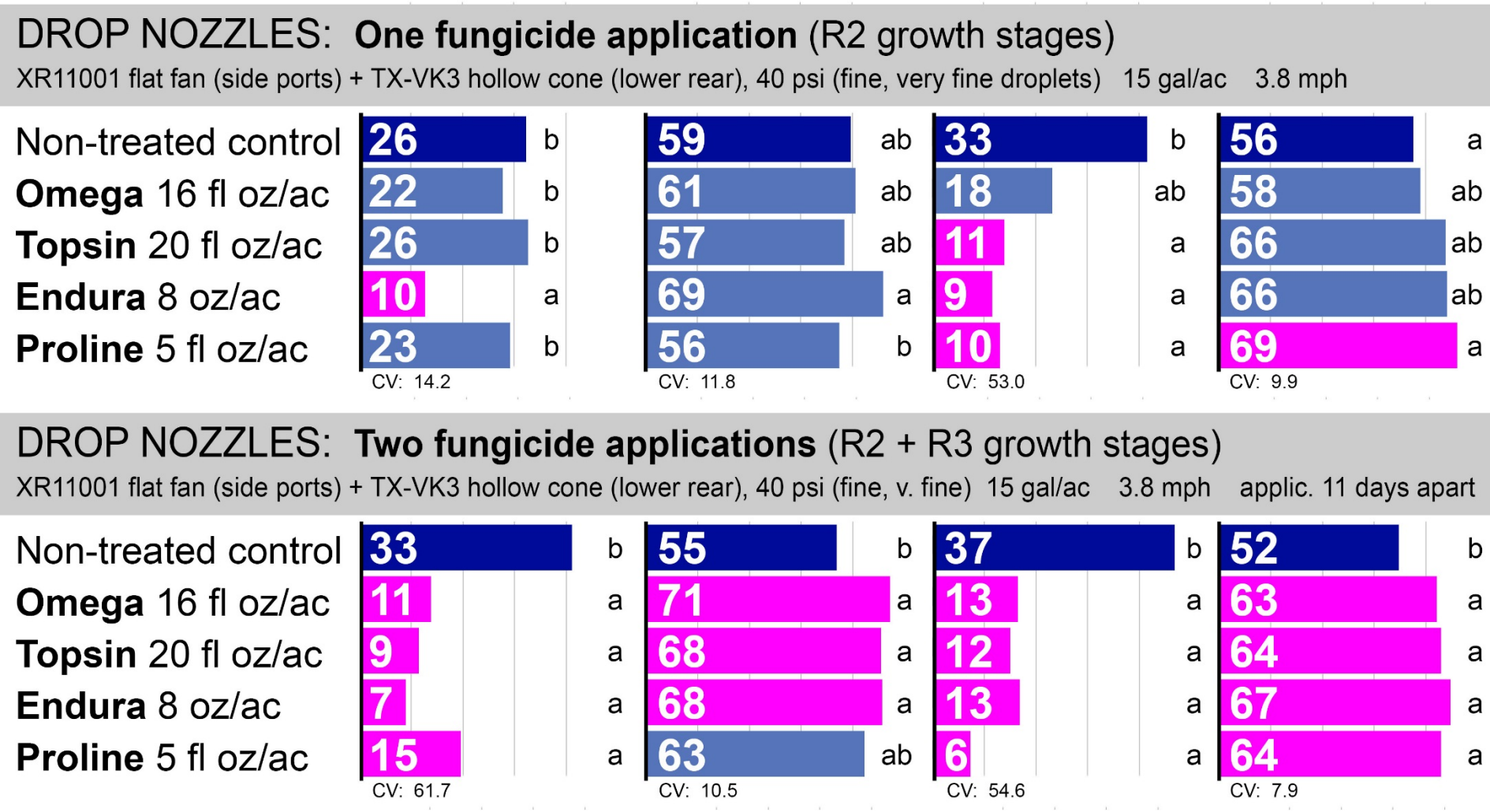

Sclerotinia management in soybeans – field trials conducted in Carrington and Oakes, ND (2019)

Impact of application method and application frequency on fungicide efficacy

Soybean row spacing:
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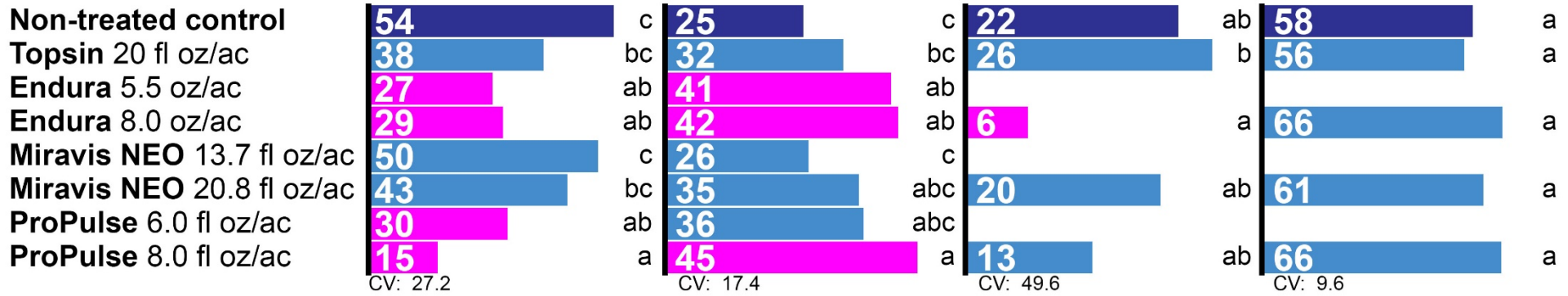
Peterson Farms '17X04N' (0.4 maturity)

Oakes, ND (2019)
Peterson Farms '18X11N' (1.1 maturity)

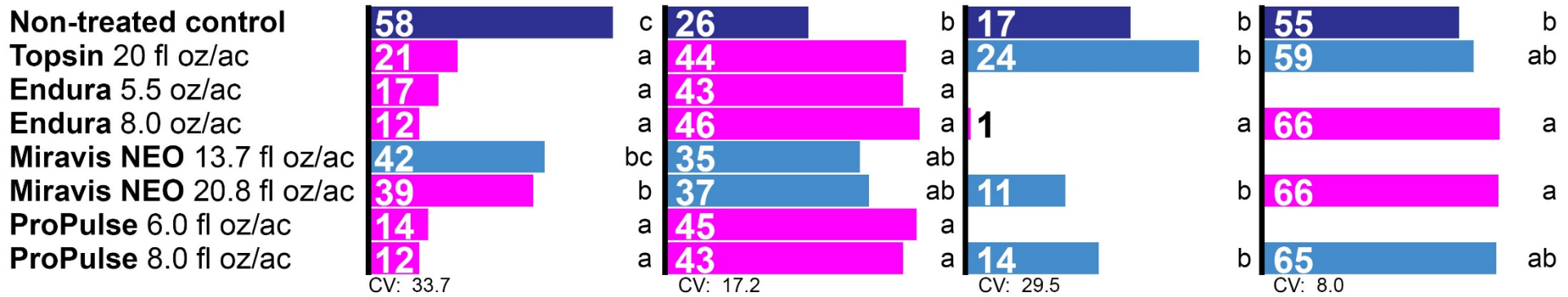
BOOM-MOUNTED NOZZLES: **One fungicide application** (R2 growth stage)

Wilger MR110-03 flat-fan nozzles, 40 psi (coarse droplets) spray volume = 15 gal/ac driving speed = 5.9 mph



BOOM-MOUNTED NOZZLES: **Two fungicide applications** (R2 + R3 growth stages)

Wilger MR110-03 flat-fan nozzles, 40 psi (coarse droplets), 15 gal/ac, 5.9 mph applications 7 or 10 days apart



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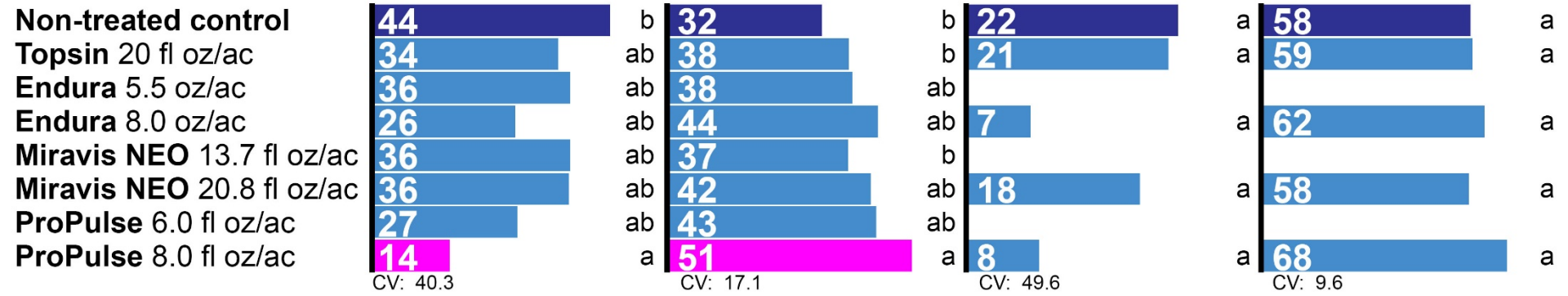
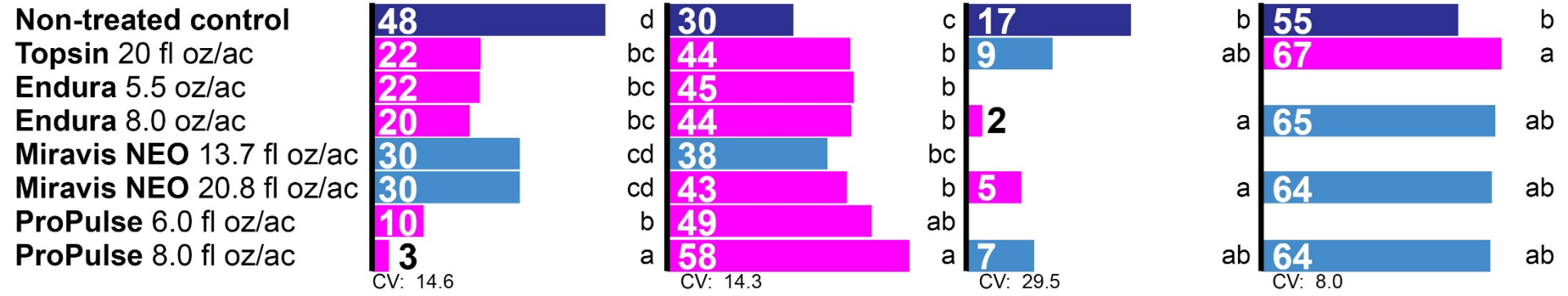
DROP NOZZLES: **One fungicide application** (R2 growth stages)

TeeJet TJ60-1102 twin-jet nozzles on side ports of drop nozzle, 40 psi (very fine droplets) 15 gal/ac 4.0 mph



DROP NOZZLES: **Two fungicide applications** (R2 + R3 growth stages)

TJ60-1102 nozzles on side ports of drop nozzle, 40 psi (very fine droplets), 15 gal/ac, 4.0 mph applications 7 or 10 days apart



Sclerotinia management in soybeans – Carrington and Oakes, ND (2017, 2018)

Applying fungicides with drop nozzles improved white mold control when fungicides were applied to soybean canopies at or near closure

21-inch row spacing

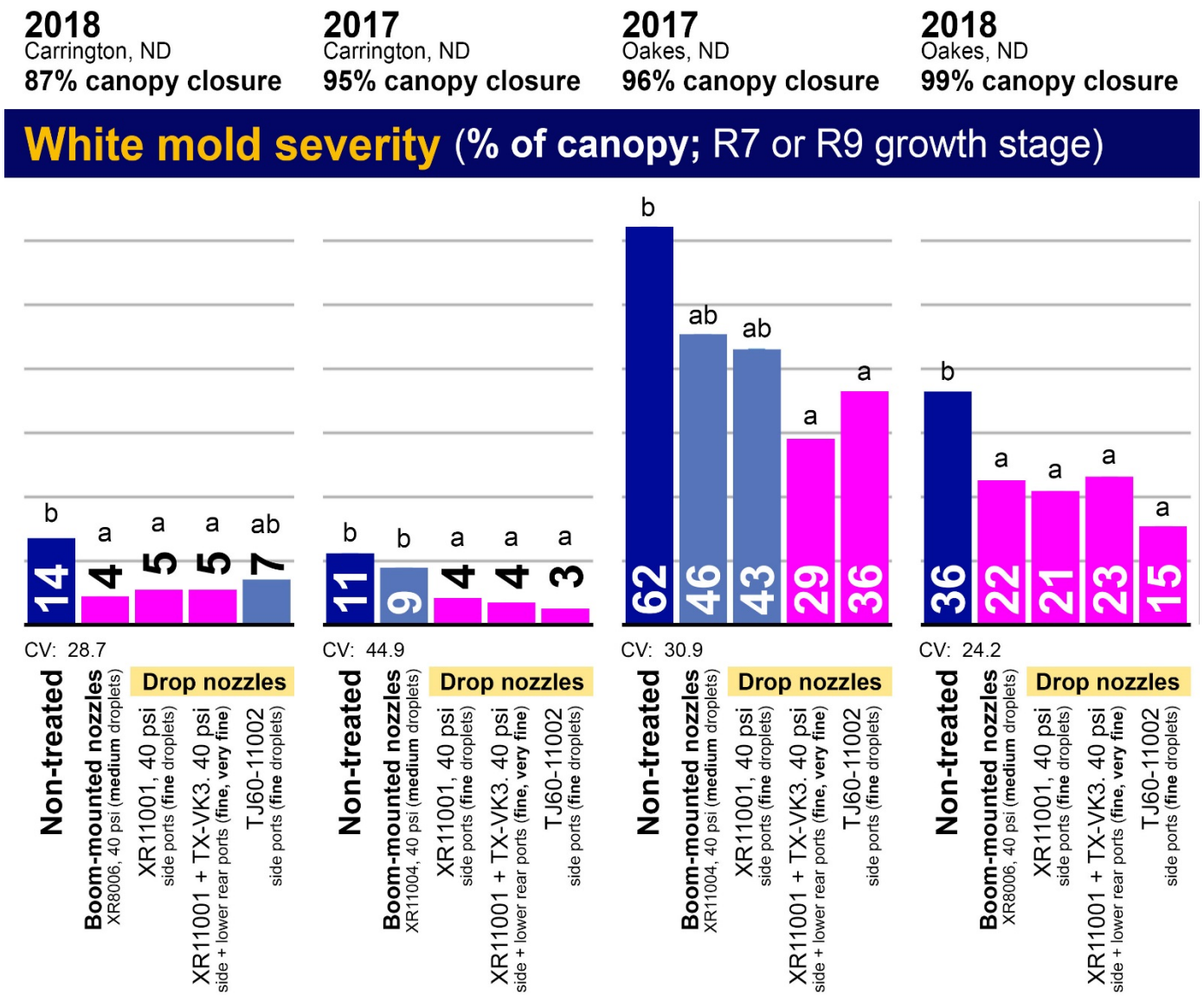
Spray volume: 15 gal/ac

Fungicide: Endura, 5.5 oz/ac

Application timing:
Full R2 growth stage

Driving speed, boom mounted nozzles:
6.7 mph

Driving speed, drop nozzles:
3.8 mph



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Sclerotinia management in soybeans – field trials conducted in Carrington and Oakes, ND (2017, 2018)

Applying fungicides with drop nozzles improved soybean yield under white mold pressure when applied to soybean canopies at or near closure

21-inch row spacing

Spray volume: 15 gal/ac

Fungicide: Endura, 5.5 oz/ac

Application timing:
Full R2 growth stage

Driving speed, boom mounted nozzles:
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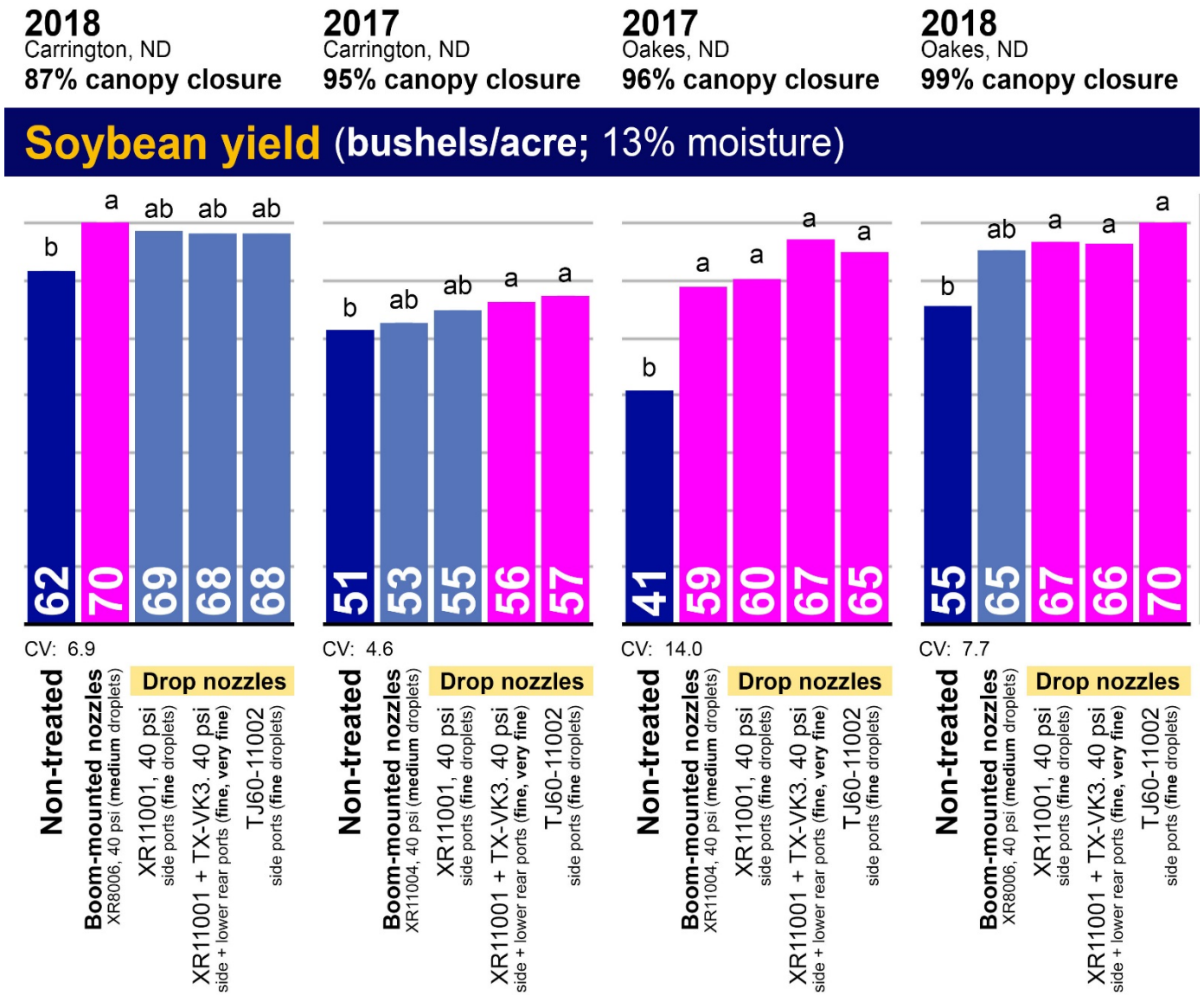

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'360 Undercover' drop nozzles (360 Yield Center; Morton, IL)

(1) When to use the '360 Undercover' drop nozzle:

Drop nozzles are most likely to improve fungicide performance when the **soybean canopy is at or near closure**

Drop nozzles may facilitate **more consistent fungicide performance**, providing opportunities to use a cheaper product

(2) Drop nozzle setup:

Use wide-angle (110-degree) nozzles on side ports
Multi-directional sprays within the canopy are likely optimal

110˚ twin-jet nozzles on side ports or
110˚ twin-jet or flat-fan nozzles on side ports + 80˚ hollow-cone on lower rear port

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Thank You!

Research funding:
North Dakota Soybean Council

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