

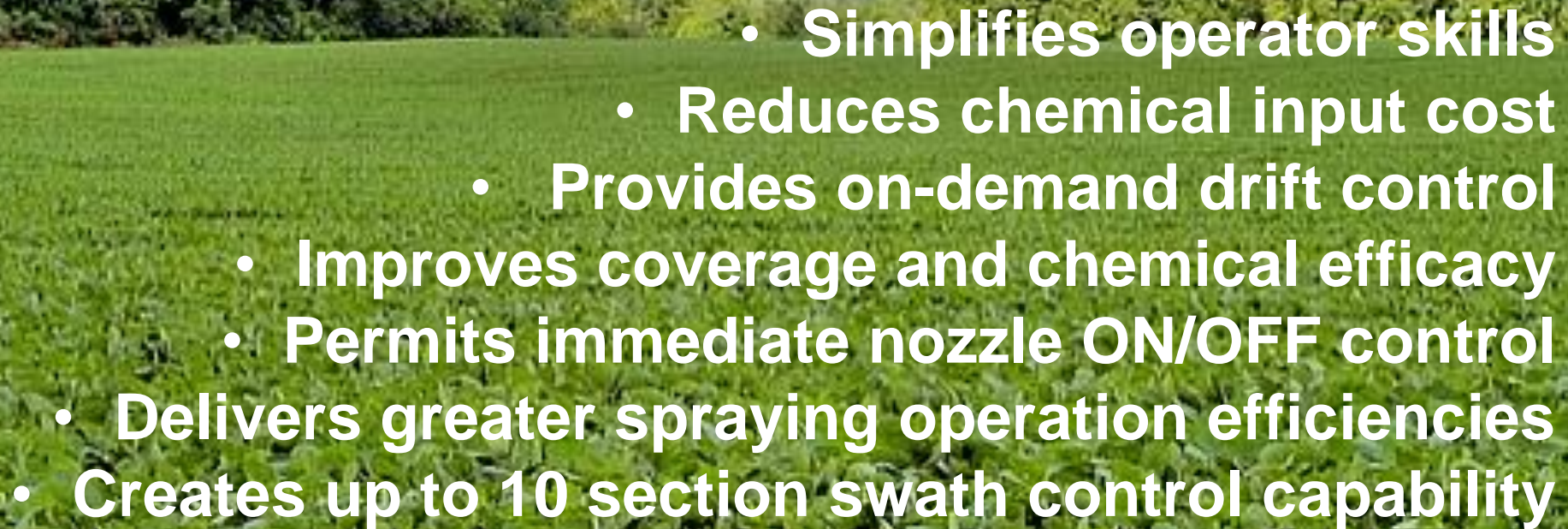
Capstan Ag Systems

Creating
Novel Solutions
to Tough Ag Problems

www.capstanag.com



Capstan AG Systems presents innovative technologies that:

- 
- Simplifies operator skills
 - Reduces chemical input cost
 - Provides on-demand drift control
 - Improves coverage and chemical efficacy
 - Permits immediate nozzle ON/OFF control
 - Delivers greater spraying operation efficiencies
 - Creates up to 10 section swath control capability

All in a manner friendly to the environment...

The Secret Weapon!



SharpShooter®



Adding SharpShooter, a proven, reliable technology, to your existing rate controller provides for:

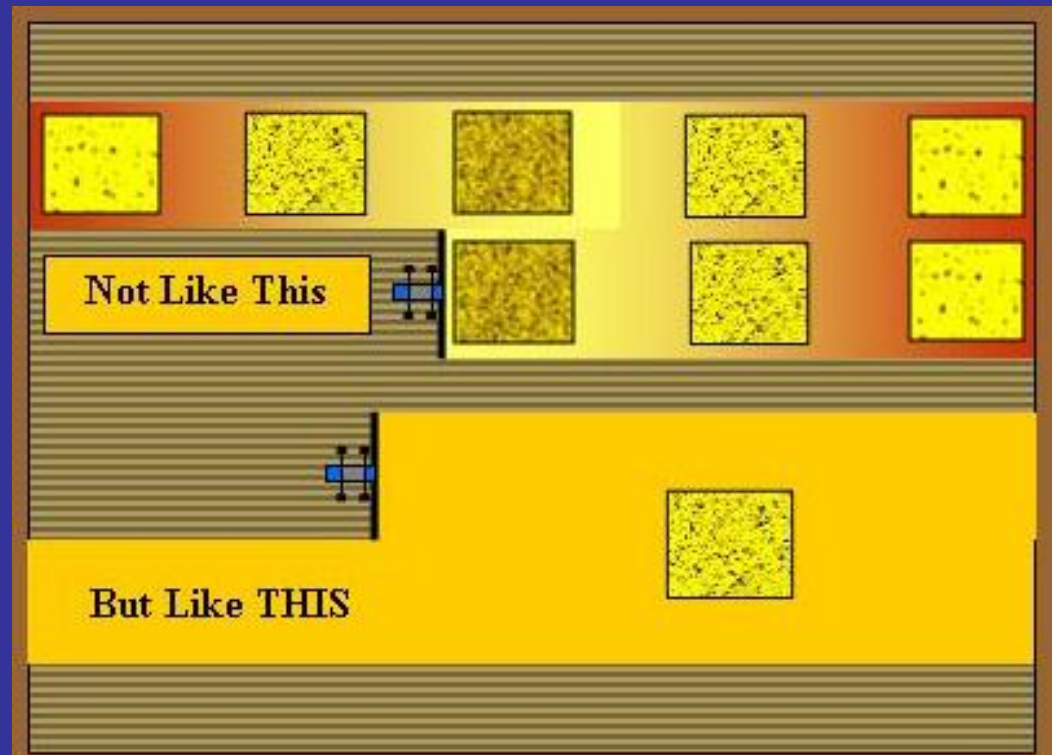
Improved Operation Efficiency and Application Quality:

SharpShooter allows the operator the option of spraying up to a 6:1 Speed Change....from 4 to 24 mph

...while maintaining a:

1. constant rate,
2. constant operator-set pressure
3. constant droplet size and pattern....

...without changing tips.



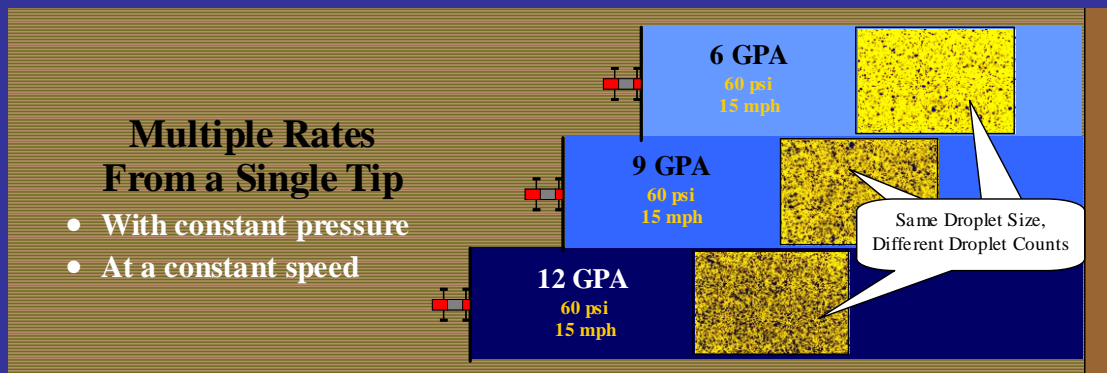
In short, the operator has increased speed range capability with an actual quality improvement!

Expanded Application Rate Range Through a Single Tip:

SharpShooter works with an existing rate controller to provide:

The capability of applying up to a 2:1 range of application rates per chemical mode of action...

...without changing tips.



On-Demand Drift Control:

SharpShooter utilizes drift reduction tips, but also affords the operator further “On-Demand” drift control.

The operator simply dials the **SharpShooter** control to a lower pressure. The operator-selected lower pressure provides bigger droplets and fewer drift-able fines.

The application rate and speed are maintained independent of this pressure change.

Once the drift concern is past, the operator can dial the pressure back to the original pressure set point for optimum efficacy.



Instant Boom On and Off Boom Tip Control:



SharpShooter controls the “ON” and “OFF” spraying function RIGHT AT THE TIP. Shut off is instantaneous.

The flow and pressure are retained in the boom at the tips so when the boom is turned “ON” there is instantaneous flow at the proper pressure.



Multiple Nozzle Body Options

PWM Body only for Chemicals up to 20 GPA

Non-PWM Body only for conventional spraying

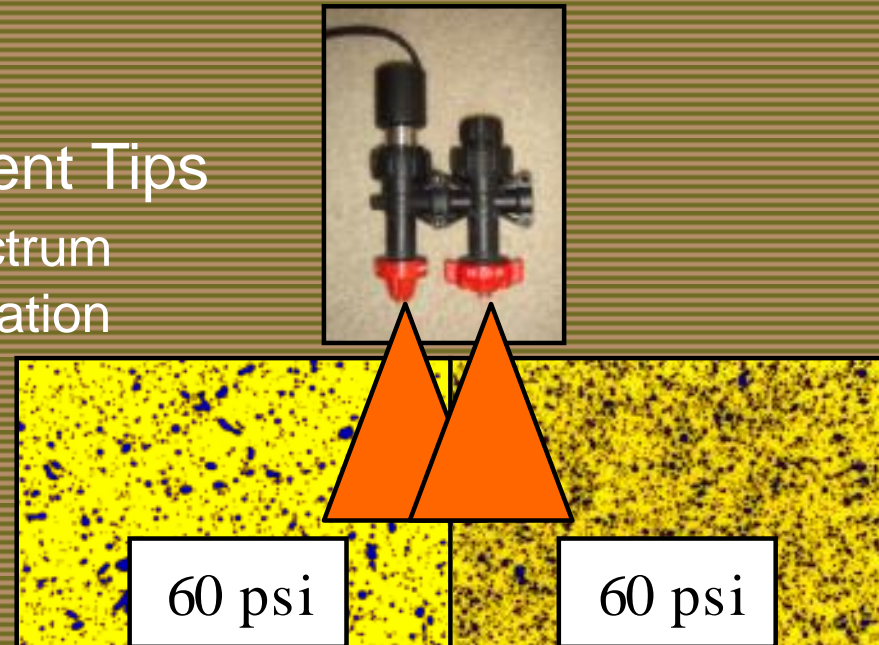
- Fail-Safe Backup
- Liquid Fertilizer

Both Bodies for rates above 20 GPA

- Fungicides
- Fertilizer

Both Bodies with Different Tips

- Broader Droplet Spectrum
- Better Canopy Penetration



Module 2: Advanced Rate Control

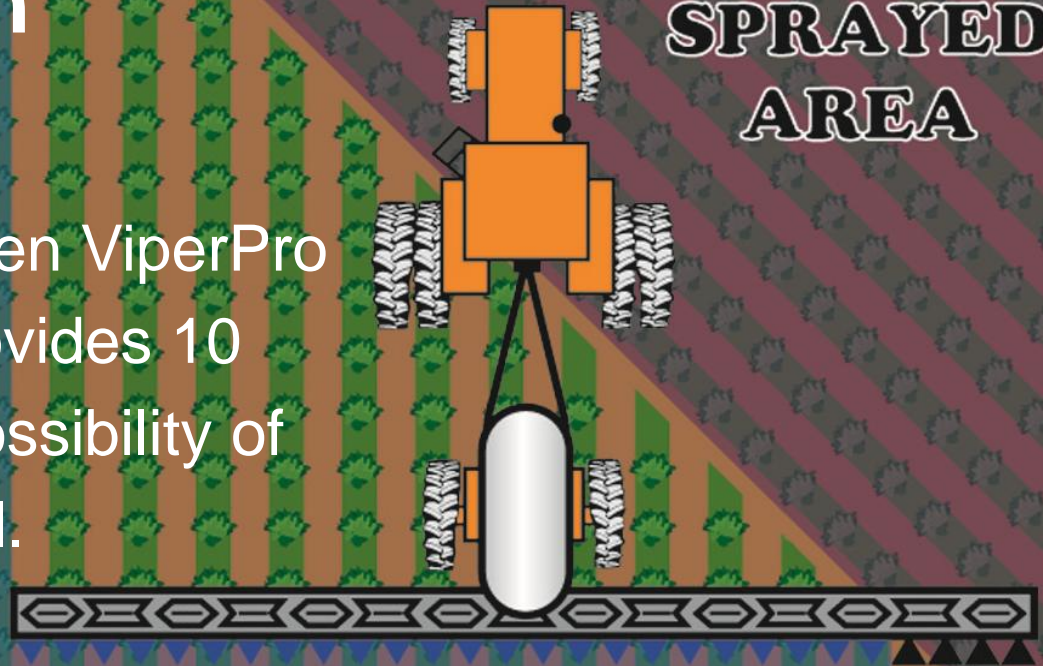
Controllers like the Raven ViperPro or Ag Leader Insight, proven, reliable technologies, replace the existing rate controller.

Coupled with **SharpShooter**, this technology marriage provides:



Individual Section Overlap Control:

SharpShooter with Raven ViperPro or Ag Leader InSight provides 10 sections, allowing the possibility of individual section control.



With swath control software, individual sections will now automatically and instantly shut off as the boom passes over areas that have already been applied.

Individual sections are automatically and instantaneously turned back on when it encounters un-applied areas.

As-Applied Application Mapping:

An “As-Applied” map is a visual record of the application as it is being created by the GPS-guided sprayer

Recorded by the advanced rate controller, an “As-Applied” map can be created and named for each field.

Then each map can later be downloaded to the office computer as a permanent record of the application.



Capstan Ag Systems

Creating
Novel Solutions
to Tough Ag Problems
www.capstanag.com



Application Technical History

Speed and Pressure Applications:

Set a constant pressure, pick a tip that at a constant speed the sprayer puts out a constant rate and constant droplet size.

Greatest Challenge: Rate variation with changes in speed; operator skill

Rate Controller Applications:

Set a constant rate within a 2:1 speed range.

Greatest Challenge: The faster speed capability solves one problem but leaves others unsolved and actually creates additional problems; requires a different set of operator skills.



NEW CHALLENGES: Higher application costs require more application problems to be solved.

Application Technology

Speed and Pressure

Type of Spraying	Type of Sprayer	Tip Selection	What is Held Constant	Speed Range	What Varies		
					Rate	Pressure	Droplet Size
Speed and Pressure	Tractor Mount or Pull-Type	One Tip per Speed	Pressure	Single Speed	Constant	Constant	Constant

Application Technology

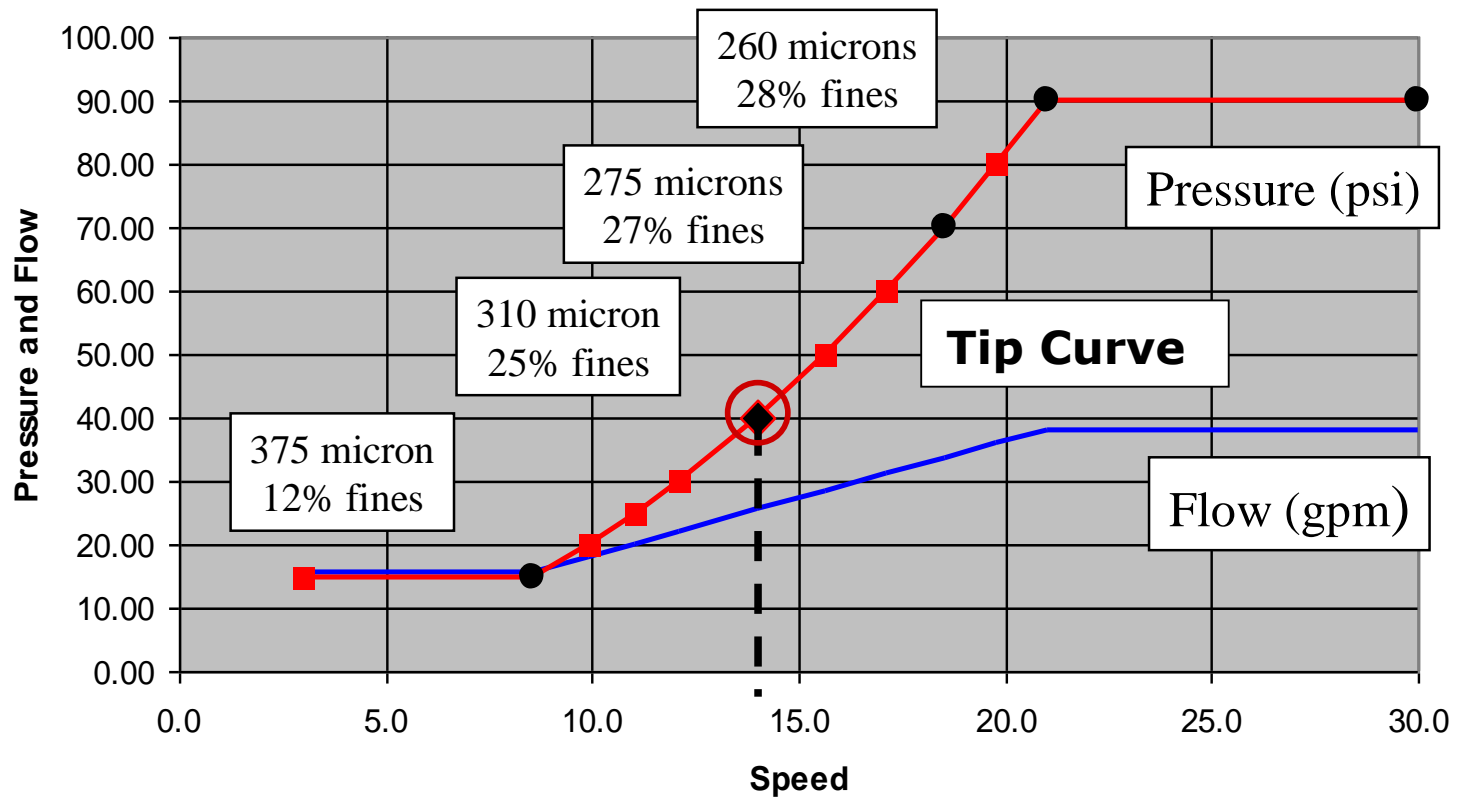
Rate Controller

Type of Spraying	Type of Sprayer	Tip Selection	What is Held Constant	Speed Range	What Varies		
					Rate	Pressure	Droplet Size
Speed and Pressure	Tractor Mount or Pull-Type	One Tip per Speed	Pressure	Single Speed	Constant	Constant	Constant
Rate Controller	Pull-Type Self-Propelled	One Tip per Rate	Rate	2:1 Range	Constant	(Chg of Speed) ²	(Chg of Pressure) ³

Standard Rate Controller

Single Tip Performance:

XR 11005 Tip
10GPA, 14 mph, 40 psi

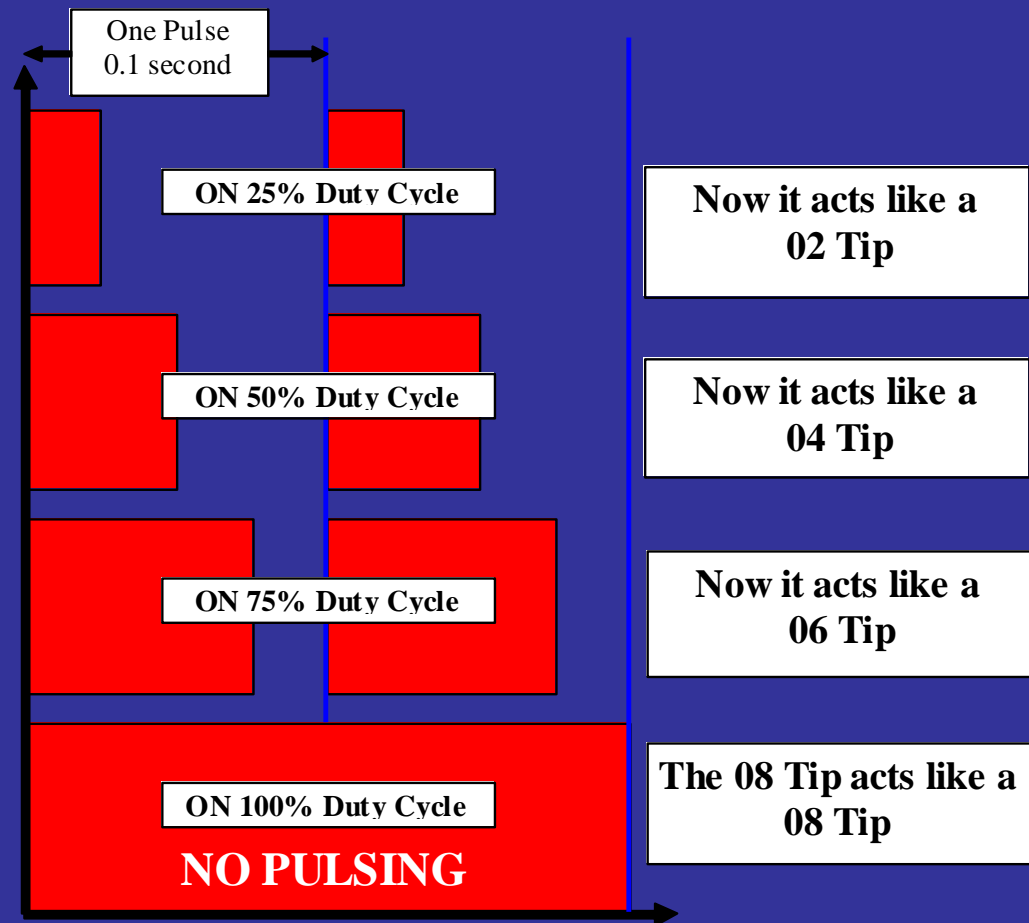


PWM Creates a Variable Tip

1. Size a Standard Tip to the Maximum Flow Required
(Top Rate and Maximum Speed)
2. Use PWM to Simulate a Smaller Tip
 - a. Achieve Variable Rates
 - b. Manage Pressure
3. Selected Tip Droplet Size



For example: Using an 08 flat fan tip

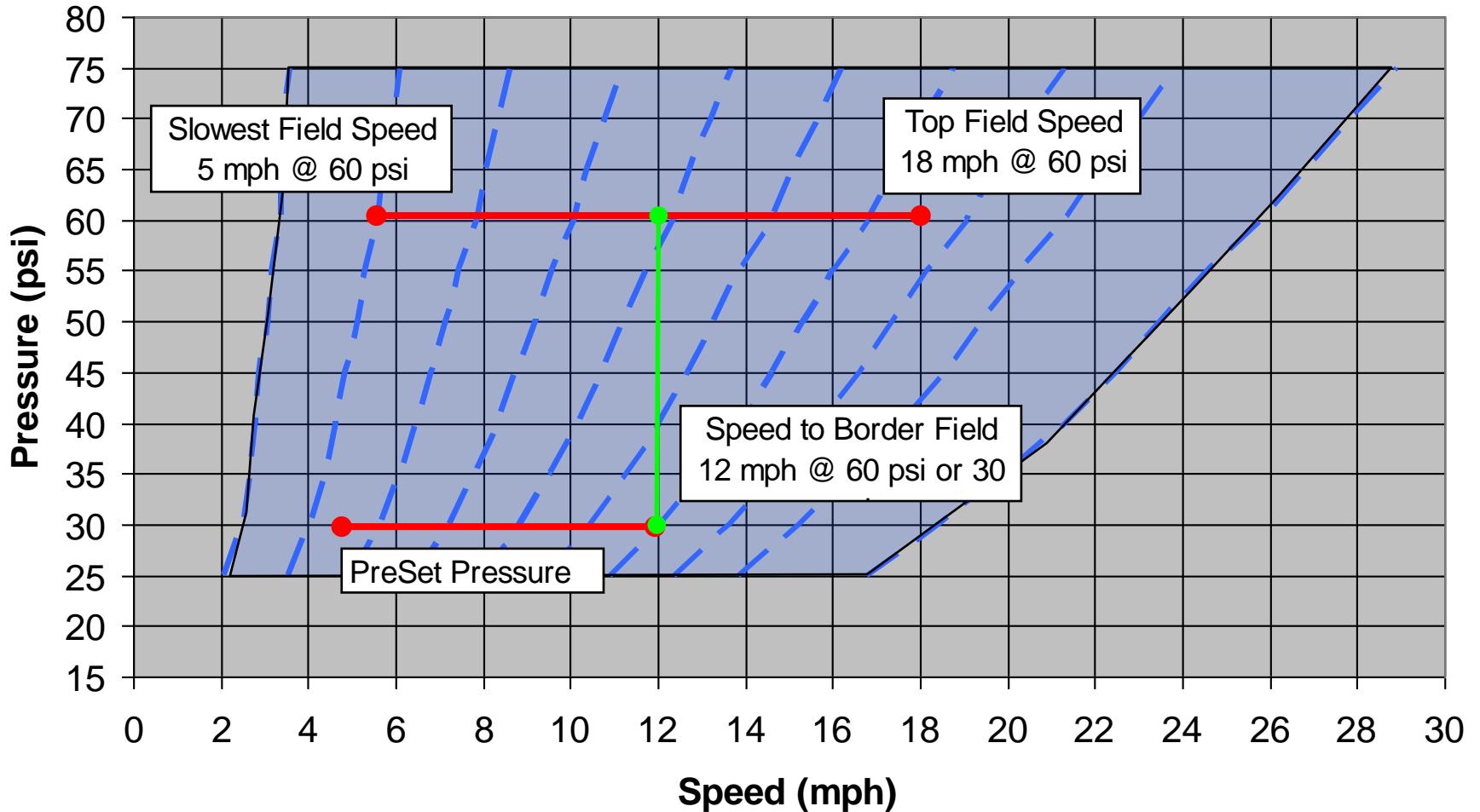


Application Technology

Rate Controller with SharpShooter

Type of Spraying	Type of Sprayer	Tip Selection	What is Held Constant	Speed Range	What Varies		
					Rate	Pressure	Droplet Size
Speed and Pressure	Tractor Mount or Pull-Type	One Tip per Speed	Pressure	Single Speed	Constant	Constant	Constant
Rate Controller	Pull-Type Self-Propelled	One Tip per Rate	Rate	2:1 Range	Constant	(Chg of Speed) ²	(Chg of Pressure) ³
SharpShooter	Self-Propelled	One Tip per Chemical Mode of Action	Rate and Pressure	8:1 Range	Constant	Constant	Constant

SharpShooter Tip Performance Envelope Using an MR110-08 Tip



What Droplet Size Is Sprayed?



Typically Not Known
Typically Much Larger Than Required

Why?
To Avoid Drift

Results in:
Larger but Exponentially Fewer Droplets

Thus Requiring
Large Gallon/1000 ft² Rates to Provide Coverage

Application Technology

SharpShooter Tip Selection

	Rate Controller		AIM/SS
Mode of Action	Class		Class
Fungicide	VF <135	to	F 135 - 235
			Not Necessary
Insecticide	F 135 - 235	to	M 235 - 340
			M
Fungicide (Asian Soybean Rust)	Not Achievable		250 (Dryer Climate)
Contact Herbicide	M 235 - 340	to	C 340 - 400 280 (Wetter Climate)
Systemic Herbicide	C 340 - 400	to	VC 400 - 500 C 350 (Dryer) to 400 (Wetter)
Fertilizer	VC 400 - 500	to	XC >500 XC >500

Mode of Action:
Systemic
(RoundUp: 400)

5 GPA

17 mph

40 psi

Tip for Rate Controller Spraying with Standard Tip Chart

		GPA		5.0					
03	PSI	20	30	40	50	60	70	80	
	GPM	0.21	0.26	0.30	0.34	0.37	0.40	0.42	
50 Mesh	MPH	12.6	15.4	17.8	19.9	21.8	23.6	25.2	
MR110 03	VMD	445	390	350	330	315	300	280	
40291-03	%<200	10	15	20	20	25	25	30	
PO 40285-03	%200-600	69	71	69	73	69	70	66	
	%>600	21	14	12	7	6	5	4	

		GPA		7.0					
03	PSI	20	30	40	50	60	70	80	
	GPM	0.21	0.26	0.30	0.34	0.37	0.40	0.42	
50 Mesh	MPH	9.0	11.0	12.7	14.2	15.6	16.8	18.0	
MR110 03	VMD	445	390	350	330	315	300	280	
40291-03	%<200	10	15	20	20	25	25	30	
PO 40285-03	%200-600	69	71	69	73	69	70	66	
	%>600	21	14	12	7	6	5	4	

Application Technology

SharpShooter Tip Selection

Mode of Action: Systemic
(RoundUp: 400)

MR 110-03					
Pressure	Rate	Speed Range	Droplet Size	% Fines	<600
60	4	6.7 to 26.8	395	13	86
30	4	4.7 to 19.0	484	8	73
60	5	5.4 to 21.5	395	13	86
30	5	3.8 to 15.2	484	8	73
60	7	3.8 to 15.3	395	13	86
30	7	2.7 to 10.8	484	8	73

Application Technology

SharpShooter Tip Selection

Mode of Action: Contact

(Fungicide, Insecticide, Weed Herbicides: 280)

SR 110-05					
Pressure	Rate	Speed Range	Droplet Size	% Fines	<600
60	8	5.4 to 21.6	287	27	95
30	8	3.8 to 15.3	368	15	90
60	10	2.2 to 17.3	287	27	95
30	10	1.5 to 12.2	368	15	90
60	12	1.8 to 14.4	287	27	95
30	12	1.3 to 10.2	368	15	90

PWM Technology

Why Would You Spray Without It?

- Operation Efficiency
 - Independent Speed, Pressure and Rate Control
 - Wider Speed Range
 - Wider Rate Range
 - Pressure Control
 - Fewer Tips
 - Reliable, Easy to Use
 - On-the-Go Drift Control
- Increased Productivity
 - Increased Average Field Speed
 - Larger Spray Window



- Improved Quality**
 - Target Precise VMD Droplet
 - Consistent Droplet Size and Application
 - Better Canopy Penetration
 - Immediate ON/OFF at the Tip
 - Overlap Nozzle Configuration

SharpShooter



Capstan Ag Systems

Creating
Novel Solutions
to Tough Ag Problems

www.capstanag.com

